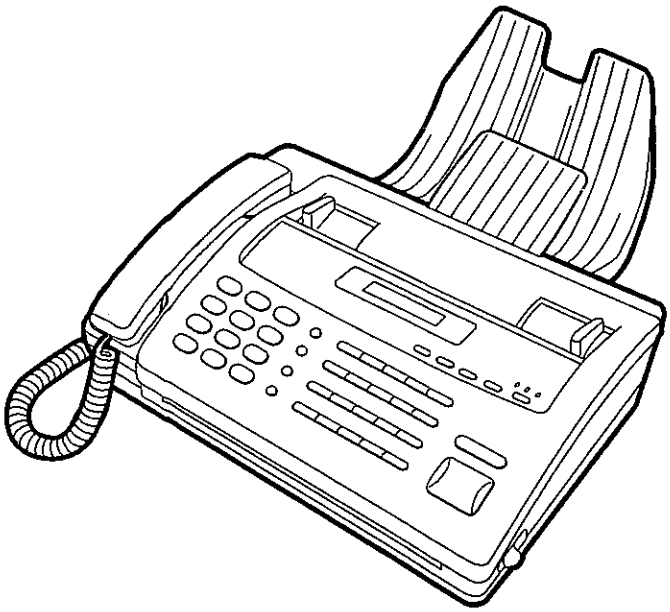
# SHARP SERVICE MANUAL

CODE: 00ZFO235ATSME



# FACSIMILE

## MODEL FO-235

**AT: Austria**
**PT: Portugal**

CONTENTS


**CHAPTER 1. GENERAL DESCRIPTION**
[1] Specifications ..... 1-1
[2] A look at the machine ..... 1-2
[3] Operation Panel ..... 1-3
[4] Transmittable Documents ..... 1-4
[5] Installation ..... 1-5
[6] Quick reference guide ..... 1-7

**CHAPTER 2. ADJUSTMENTS**
[1] Adjustments ..... 2-1
[2] Diagnostics and service soft switchs ... 2-2
[3] Troubleshooting ..... 2-13
[4] Error code table ..... 2-14

**CHAPTER 3. MECHANISM BLOCKS**
[1] General description ..... 3-1
[2] Disassembly and assembly procedures 3-4

**CHAPTER 4. DIAGRAMS**
[1] Block diagram ..... 4-1
[2] Wiring diagram ..... 4-2
[3] Point to point diagram ..... 4-3
[4] Connector for signal name ..... 4-4

**CHAPTER 5. CIRCUIT DESCRIPTION**
[1] Circuit description ..... 5-1
[2] Description of control PWB ..... 5-2
[3] Description of CCD PWB ..... 5-11
[4] Description of TEL/LIU PWB & power supply PWB ..... 5-11

**CHAPTER 6. CIRCUIT SCHEMATICS AND PARTS LAYOUT**
[1] Control PWB circuit ..... 6-1
[2] TEL/LIU PWB circuit ..... 6-7
[3] Power supply PWB circuit ..... 6-12
[4] CCD PWB circuit ..... 6-14
[5] LCD PWB circuit ..... 6-15

**CHAPTER 7. OPERATION FLOWCHART**
[1] Protocol ..... 7-1
[2] Power on sequence ..... 7-2

**CHAPTER 8. OHTERS**
[1] Service Tools ..... 8-1
[2] IC signal name ..... 8-3
PARTS GUIDE


Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

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The contents are subject to change without notice.

# This manual is used for FO-235.

## CONFIGURATION

| Country | | Operational panel | Display/Print | | Operation Manual | AC cord | Line connector | | TEL function | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Initial | Local | | | Line | EXT. TEL | Availability | Unpower dial |
| SE | SWEDEN | ENGLISH type (2) | ENGLISH | SWEDISH | SWEDISH | 3 pin type | 4/6 Modular | 2/6 Modular | Yes | No |
| NO | NORWAY | | | ENGLISH (DANNISH) | ENGLISH type (2) | | | | | Yes |
| FI | FINLAND | | | FINNISH | | | | | | Yes |
| DK | DENMARK | | | DANNISH | | | | | | Yes |
| NL | NETHERLANDS | | | DUTCH | DUTCH | | | | | Yes |
| | ICE LAND | | | ENGLISH | ENGLISH | | | | | Yes |
| IT | ITALY | | | ITALIAN | ITALIAN | | | | | Yes |
| ES | SPAIN | | | SPANISH | SPANISH | | | | | Yes |
| PT | PORTUGAL | | | ENGLISH (SPANISH) | ENGLISH type (3) | | | | | |
| BE | BELGIUM | | | FRENCH. (DUTCH) | | | | | | |
| DE | GERMANY | GERMAY | GERMANY | GERMANY | GERMANY | | | | | No |
| CH | SWITZERLAND | | | ENGLISH | | | | | | Yes |
| AT | AUSTRIA | | | | | | | | | |
| F | FRANCE | FRENCH | FRENCH | FRENCH | FRENCH | | | | | |

# CHAPTER 1. GENERAL DESCRIPTION

## [1] SPECIFICATIONS

**Applicable telephone line:** Public switched telephone network/PBX

**Compatibility:** CCITT G3 mode

**Configuration:** Half-duplex, desktop transceiver

**Compression scheme:** Modified Huffman and Sharp special mode

**Scanning method:** Flat-bed, solid-state CCD

**Resolution:** Horizontal: 8 lines/mm
Vertical:
Standard — 3.85 lines/mm
Fine/Halftone — 7.7 lines/mm

**Recording system:** Thermal recording

**Display:** 7 x 5 dots, 1 line by 16-digit display

**Auto Cutter:** Standard (to length of original)

**Reception modes:** Auto/Manual/Answering machine

**Modem speed:** 9600 bps with automatic fallback to 7200, 4800, or 2400 bps

**Transmission time*:** Approx. 15 seconds (Sharp special mode)

**Effective recording width:** 210 mm max.

**Input document size:** Automatic feeding:
Width — 148 to 216 mm
Length — 128 to 297 mm
Manual feeding:
Width — 148 to 216 mm
Length — 128 to 1000 mm

**Effective scanning width:** 210 mm max.

**Automatic document feeder:** Standard (10 sheets max.)

**Halftone (gray scale):** Standard (16 levels)

**Contrast control:** Automatic/Dark selectable

**Copy function:** Standard

**Telephone function:** Standard

**Noise emission:** Less than 70 dBA (Measured according to DIN 45635.)

**Power requirements:** 220 – 230 V AC, 50 Hz

**Operating temperature:** 5 to 35°C

**Power consumption:** Stand-by: 8.5 W
Maximum: 120 W

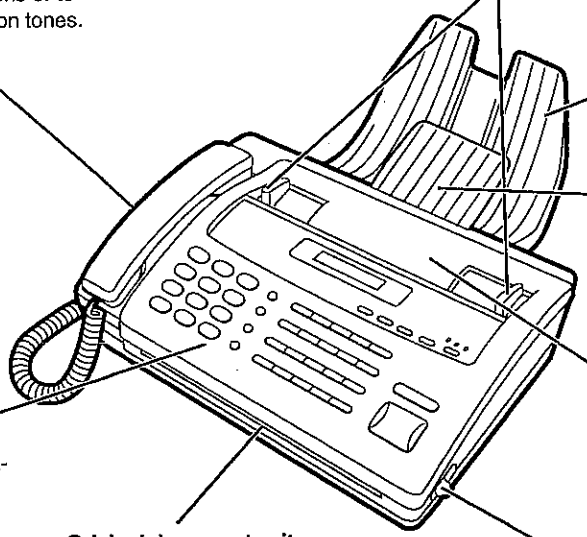
**Dimensions:** Width: 340 mm
Depth: 255 mm
Height: 115 mm

**Weight:** Approx. 3.9 kg

* Based on CCITT Test Chart #1 at standard resolution in Sharp special mode, excluding time for protocol signals (i.e., CCITT phase C time only).

<IMPORTANT PLEASE READ FIRST>
To avoid problems with supplies, plases don't use supplies from other units. Please use new supplies, when supply changes are required.

# [2] A look at the machine



**Handset**
Use the handset for ordinary telephone conversations or to listen for fax connection tones.

**Adjustable document guide**
When transmitting or copying a document, set these guides to the width of the document.

**Received document tray**
Holds received documents and copies.

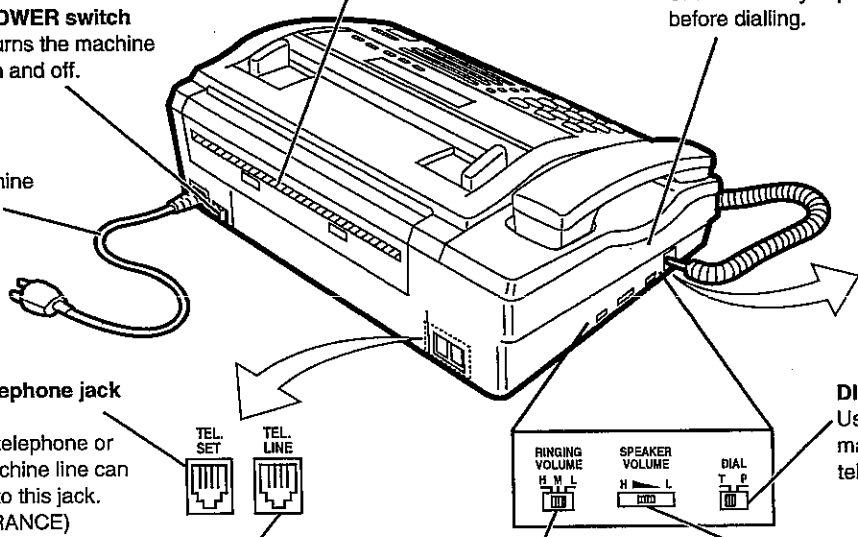
**Document support**

**Document feeder**
Documents to be transmitted or copied are placed face down here.

**Operation panel**
Use the keys on the operation panel to input instructions to the machine.

**Original document exit**
The original comes out of the machine here after being scanned for transmission or copying.

**Operation panel knob**
Pull this knob to open the operation panel.




**Received document exit**
Received documents and copies come out of the machine here.

**Speaker**
Voices or fax tones are heard from here when the **SPEAKER** key is pressed before dialling.

**POWER switch**
Turns the machine on and off.

**Handset jack**
The handset cord is inserted into this jack.

**Power cord**
Connects the machine to a power outlet.

**Extension telephone jack (TEL. SET)**
An extension telephone or answering machine line can be inserted into this jack. (Except for FRANCE)

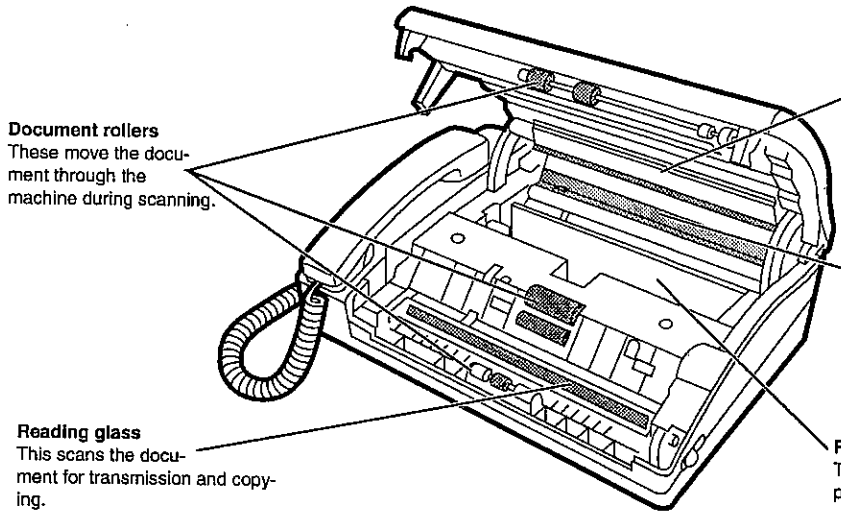
**DIAL switch**
Use this to set the fax machine to the type of telephone line you are on.

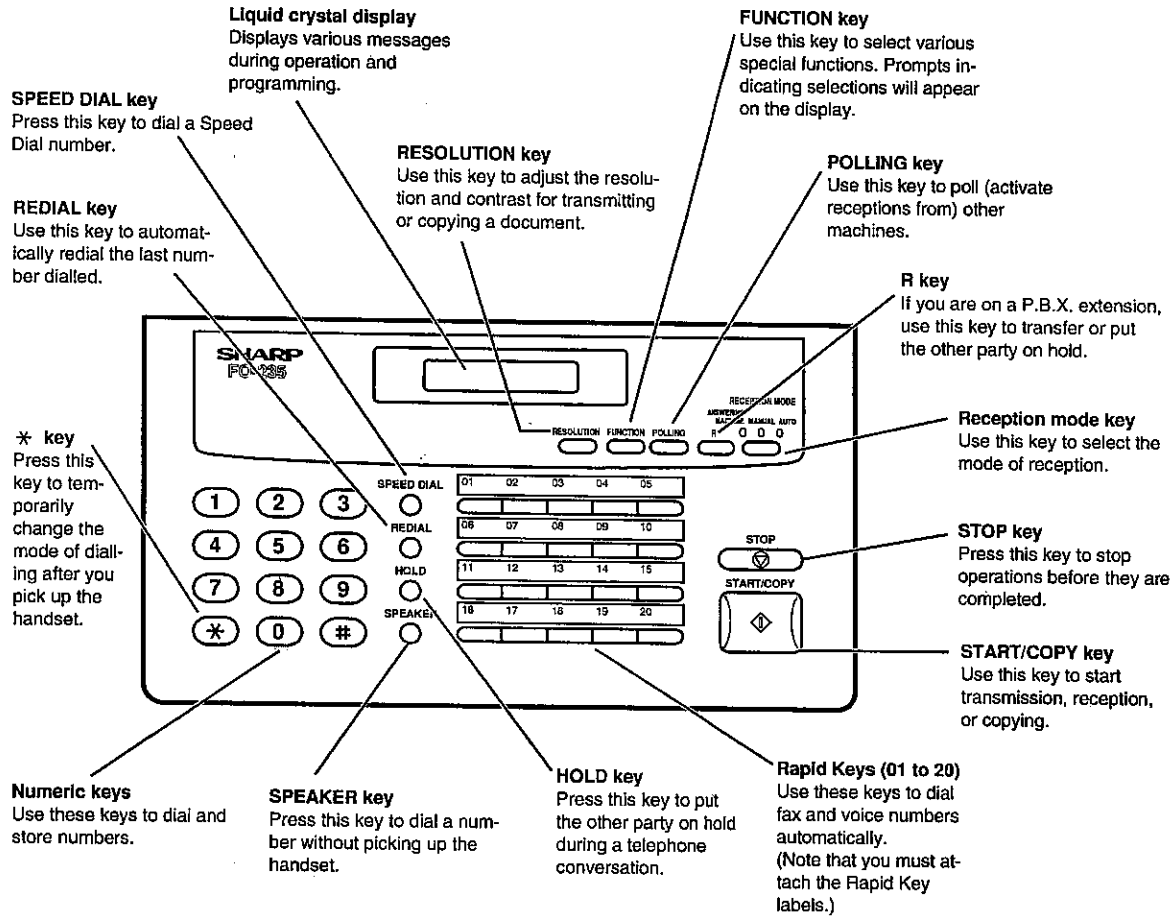
**Telephone line jack (TEL. LINE)**
The telephone line is inserted into this jack.

**Ringing volume selector**
Use this to adjust the ringing volume.

**Speaker volume control**
Use this to adjust the speaker volume.

# [3] Operation Panel


Document rollers
These move the document through the machine during scanning.
Recording head
This applies heat to the recording paper to print out documents which have been received or copied.
Paper cutter guide
The end of the recording paper is fed through here.
Reading glass
This scans the document for transmission and copying.
Recording paper compartment
This holds the roll of recording paper.


Liquid crystal display
Displays various messages during operation and programming.
FUNCTION key
Use this key to select various special functions. Prompts indicating selections will appear on the display.
SPEED DIAL key
Press this key to dial a Speed Dial number.
RESOLUTION key
Use this key to adjust the resolution and contrast for transmitting or copying a document.
POLLING key
Use this key to poll (activate receptions from) other machines.
REDIAL key
Use this key to automatically redial the last number dialled.
R key
If you are on a P.B.X. extension, use this key to transfer or put the other party on hold.
SHARP
FO-235
RESOLUTION
FUNCTION
POLLING
R
Reception mode key
Use this key to select the mode of reception.
* key
Press this key to temporarily change the mode of dialling after you pick up the handset.
SPEED DIAL
REDIAL
HOLD
SPEAKER
STOP key
Press this key to stop operations before they are completed.
STOP
START/COPY
START/COPY key
Use this key to start transmission, reception, or copying.
Numeric keys
Use these keys to dial and store numbers.
SPEAKER key
Press this key to dial a number without picking up the handset.
HOLD key
Press this key to put the other party on hold during a telephone conversation.
Rapid Keys (01 to 20)
Use these keys to dial fax and voice numbers automatically.
(Note that you must attach the Rapid Key labels.)

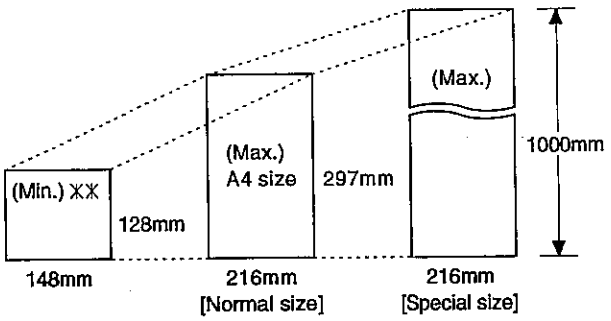
## • PANEL DISPLAY

| ENGLISH | | | GERMAN | | | FRENCH | | |
|---|---|---|---|---|---|---|---|---|
| FUNCTION | | | FUNKTION | | | FONCTION | | |
| POLLING | | | ABRUF | | | RELEVE | | |
| RECEPTION MODE | | | EMPFANGSART | | | TYPE REPONSE | | |
| ANSWERING MACHINE | MANUAL | AUTO | AN RUFB. | TELEFON | AUTOM. | REP. | MAN. | AUTO |
| SPEED DIAL | | | KURZWAHL | | | ABREGE | | |
| REDIAL | | | NEUWAHL | | | BIS | | |
| HOLD | | | STUMM | | | SECRET | | |
| SPEAKER | | | LAUTSPR. | | | HT PARLEUR | | |

# [4] Transmittable Documents

## 1. Document Sizes

| | | |
|---|---|---|
| Normal size | width | 148 – 216 mm |
| | length | 128 – 297 mm |




* With special sizes, only one sheet can be fed into the machine at a time. Insert next page into feeder as current page is being scanned.

** Use Document carrier sheet for smaller documents.

## 2. Paper Thickness & Weight

| | | |
|---|---|---|
| Normal size | Thickness | 0.06 – 0.12 mm |
| | Weight | 52 – 104g/m$^2$ |
| Special size | Thickness | 0.12 – 0.20 mm |
| | Weight | 104 – 157 g/m$^2$ |

## 3. Document Types

- Normal paper
  Documents handwritten in pencil (No. 2 lead or softer), fountain pen, ball point pen, or felt-tipped pen can be transmitted.
  Documents of normal contrast duplicated by a copying machine can also be transmitted.
- Diazo copy (blueprint)
  Diazo copy documents of a normal contrast may be transmitted.
- Carbon copy
  A carbon copy may be transmitted if its contrast is normal.

## 4. Cautions on Transmitting Documents

- Documents written in yellow, greenish yellow, or light blue ink cannot be transmitted.
- Ink, glue, and correcting fluid on documents must be dry before the documents can be transmitted.
- All clips, staples and pins must be removed from documents before transmission.
- Patched (taped) documents should be copied first on a copier and then the copies used for transmission.
- All documents should be fanned before insertion into the feeder to prevent possible double feeds.

## 5. Automatic Document Feeder Capacity

Number of pages that can be placed into the feeder at anytime is as follows:
Normal size: max. 10 sheets
Special size: single sheet only (manual feed)

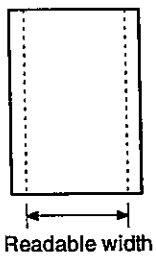
NOTES:
- When you need to send or copy more pages than the feeder limit, place additional pages in feeder when last page in feeder is being scanned.
- Place additional pages carefully and gently in feeder. If force is used, double-feeding or a document jam may result.

## 6. Readable Width & Length

The readable width and length of a document are slightly smaller than the actual document size.
Note that characters or graphics outside the effective document scanning range will not be read.

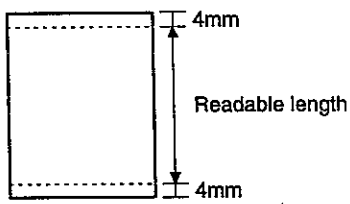
- **Readable width**

210 mm max.




- **Readable length**

This is the length of the document sent minus 4 mm from the top and bottom edges.



# [5] Installation

## 1. Site selection

Take the following points into consideration when selecting a site for this model.

### ENVIRONMENT

- The machine must be installed on a level surface.
- Keep the machine away from air conditioners, heaters, direct sunlight, and dust.
- Provide easy access to the front, back, and sides of the machine. In particular, keep the area in front of the machine clear, or the original document may jam as it comes out after scanning.
- The humidity should be between 30% and 85% (without condensation).

### ELECTRICITY

- A 220 – 230V, 50 Hz, isolated and grounded (2-prong) AC outlet is required.
- The mains outlet (socket-outlet) shall be installed near the equipment and shall be easily accessible.

### Caution!

- If your area experiences a high incidence of lightning or power surges, we recommend that you install a surge protector for the power and telephone lines. Surge protectors can be purchased at most telephone specialty stores.

### TELEPHONE JACK

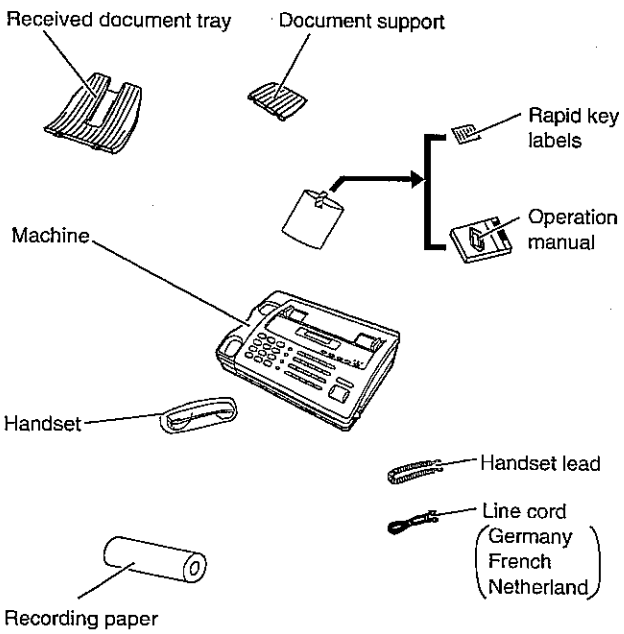
A standard telephone jack must be located near the machine.

**If the machine is moved from a cold to a warm place...**

If the machine is moved from a cold to a warm place, it is possible that the reading glass may fog up, preventing proper scanning of documents for transmission. To remove the fog, turn on the power and wait approximately 2 hours before using the machine.

## 2. Unpacking

Take the machine out of the box carefully, and remove all packing material. Make sure you have all the items listed below.

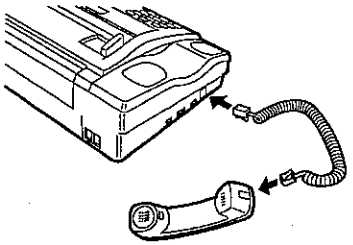



## 3. Assembly and connections

① Connect the handset cord to the handset and the machine as shown.

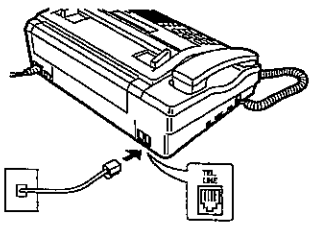
- The ends of the handset cord are identical, so they will go into either jack.

Place the handset on the handset rest.



② Insert one end of the line cable into the jack on the back of the machine marked **TEL. LINE**. Insert the other end into the wall telephone socket.

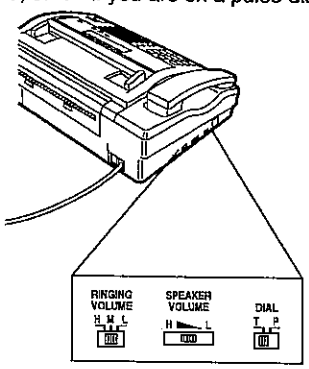
- If you are connecting the machine to a PBX, you will need to make appropriate settings for User Switch 10.



③ Adjust the volume switches on the left side of the machine:

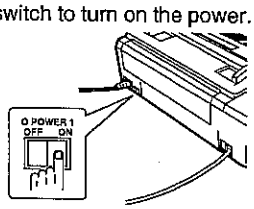
- **RINGING VOLUME**: Set the switch at high (**H**), medium (**M**), or low (**L**) as desired.
- **SPEAKER VOLUME**: Adjust the setting from high (**H**) to low (**L**) as desired.

Set the mode of dialling with the DIAL switch. Select "T" if you are on a tone dial line, or "P" if you are on a pulse dial line.

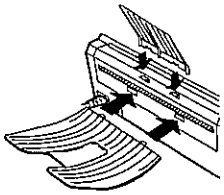



**Norway, Denmark, Sweden:** The mode of dialling is fixed at tone dialling (pulse dialling cannot be selected with the **DIAL** switch).

④ Plug the power cord into a 220-230 V, grounded (2-prong) AC outlet.
Press the power switch to turn on the power.



⑤ Mount the document support and the received document tray by inserting the tabs of each into the holes at the rear of the machine as shown.

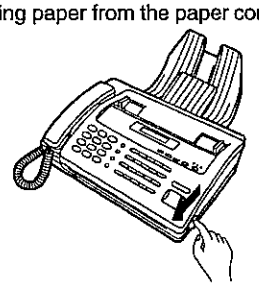


## 4. Loading the recording paper

① Pull the operation panel knob on the right side of the machine forward, and open the operation panel.

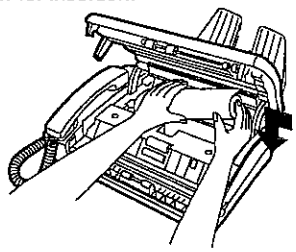
- The buzzer will sound briefly.

Remove the packing paper from the paper compartment.



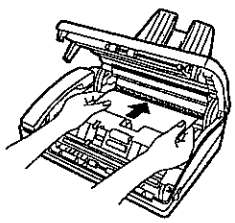
② Unwrap the roll of recording paper and insert it in the compartment.

- **Important:** The roll should be placed so that the leading edge of the paper feeds from the top of the roll.
- Make sure the hubs on each side of the compartment fit into the ends of the roll. The hub on the left side is mounted on a spring to allow for insertion.



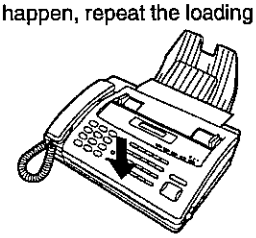
**Note:** The paper roll provided is only a 15 m sample roll. For replacement, use a 30 m roll as described.

③ Pass the leading edge of the paper under the cutter guide and pull it out through the received document exit. Remove any slack.



④ Close the operation panel by gently pushing down on the centre. A short length of the recording paper will be fed out and cut off.

- If this does not happen, repeat the loading procedure.



# [6] Quick reference guide

Use this guide as a convenient reminder for operating the machine after you have read the detailed instructions for each procedure in the manual.

**Note:**

- Steps which are optional are enclosed in a dotted frame: [ ]

## Transmitting documents

| | |
|---|---|
| **Normal Dialing** | Load document → RESOLUTION → Lift handset or press **SPEAKER** → Dial (press numeric keys) → Wait for reception tone → START/COPY → Hang up |
| **Direct Keypad Dialing** | Load document → RESOLUTION → Dial (press numeric keys) → START/COPY |
| **Rapid Key Dialing** | Load document → RESOLUTION → Press Rapid Key |
| **Speed Dialing** | Load document → RESOLUTION → SPEED DIAL → Enter Speed Dial number (press 2 numeric keys) → START/COPY |
| **Redialing** | Load document → RESOLUTION → REDIAL → Wait for reception tone → START/COPY |

## Making voice calls

| | |
|---|---|
| **Normal Dialing** | Lift handset or press **SPEAKER** → Dial (press numeric keys) → Lift handset if you pressed **SPEAKER** |
| **Rapid Key Dialling** | Lift handset or press **SPEAKER** → Press Rapid Key → Lift handset if you pressed **SPEAKER** |
| **Speed Dialing** | Lift handset or press **SPEAKER** → SPEED DIAL → Enter Speed Dial number (press 2 numeric keys) → Lift handset if you press **SPEAKER** |
| **Redialing** | Lift handset or press **SPEAKER** → REDIAL → Lift handset if you press **SPEAKER** |

## Operations using the FUNCTION key

The following chart shows how to access FUNCTION key operations. Once you have accessed the desired operation, follow the instructions which appear in the display.

| | |
|---|---|
| **Answering machine settings** | FUNCTION 0 → # or * (Press until desired item appears) |
| **Timer operations** | FUNCTION 1 → # or * |
| **Printing out lists** | FUNCTION 2 → # or * (Press until desired item appears) |
| **Entering your name and number** | FUNCTION 3 → * * |
| **Setting the date and time** | FUNCTION 3 → * |
| **Entering/clearing Rapid Key and Speed Dial numbers** | FUNCTION 3 → # → 1 or 2 |
| **Setting User Switches** | FUNCTION 4 → # or * (Press until desired item appears) |

# CHAPTER 2. ADJUSTMENTS

## [1] Adjustments

### General

Since the following adjustments and settings are provided for this model, make adjustments and/or setup as necessary.

### 1. Adjustments

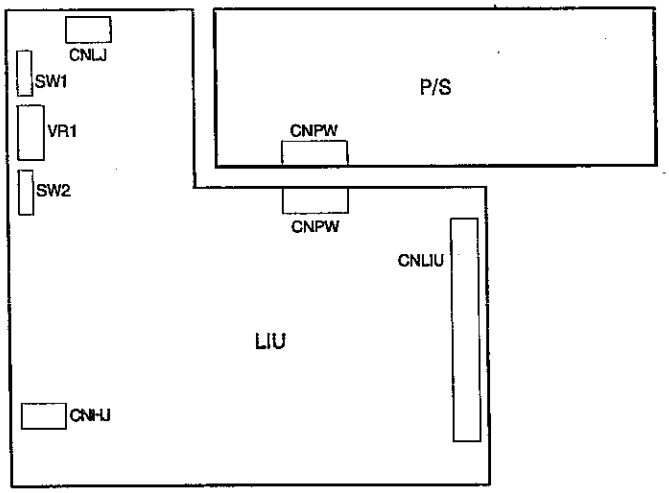
#### Adjustments of output voltage (FACTORY ONLY)

1. Install the power supply unit in the machine.
2. Set the recording paper and document.
3. When the document is loaded, power is supplied to the output lines. Confirm that outputs are within the limits below.

#### Output voltage settings

| Output | Voltage limits |
|---|---|
| +12V | 11.4V – 12.6V |
| –12V | –12.6V ~ –11.4V |
| +5V | 4.85V ~ 5.15V |
| VM (+24V) | 23.3V ~ 24.7V |

(Top view)




| Connector No. / Pin No. | CNPW |
|---|---|
| 1 | MG |
| 2 | MG |
| 3 | VM |
| 4 | VM |
| 5 | DG |
| 6 | +5V |
| 7 | AG |
| 8 | +12V |
| 9 | –12V |

Fig. 1

### 2. Settings

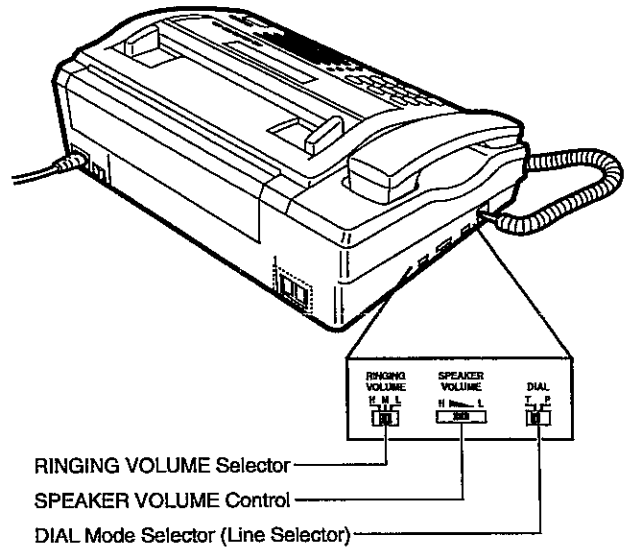
#### (1) Telephone/Fax setting

Perform the following adjustments and settings for the telephone and facsimile functions.

a) Ringing volume
The desired telephone ring volume can be selected from among three levels: high, middle, and low.

b) Speaker volume
When the SPEAKER key is pressed, the speaker volume is adjusted with this control.

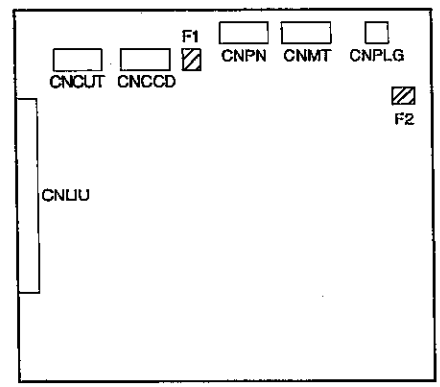
c) Dial mode selector
(Line selector)
Select P(Pulse) or T(Tone) according to the type of the telephone line.
P: Pulse dial telephone mode (10 PPS)
T: Touch tone telephone mode (Tone)




### 3. IC protectors replacement

ICPs (IC Protectors) are installed to protect the motor driver circuit and the plunger drive circuit. ICPs protect various ICs and electronic circuits from an overcurrent.

The location of ICPs is shown below:



FO-235AT/PT

(1) F1 (ICP-20) is installed in order to protect IC's from an overcurrent generated in the motor drive circuit. If F1 is open, replace it with a new one.

(2) F2 (ICP-20) is installed in order to protect IC's from an overcurrent generated in the plunger drive circuit. If F2 is open, replace it with a new one.

In addition to the replacement of F1 and F2, the factor causing F1 and F2 to open must also be repaired. If not, F1 and F2 will open again.

Replacement parts
ICP-20 (Sharp code: VHVICPN20//-1)

# [2] Diagnostics and service soft switch

## 1. Diagnostic items

| Item No. | Rapid key | Contents | Function |
|---|---|---|---|
| 1 | 01 | Soft switch mode | Displays soft SW contents, and changes the setting. |
| 2 | 02 | All black copy | Performs all-dot printing (2m). (checks thermal head operation) |
| 3 | 03 | ROM & RAM check | Checks program ROM (1M) and work RAM (10K SRAM). |
| 4 | 04 | Auto feeder mode | Feeds an original document. |
| 5 | 05 | Aging mode | Prints the check pattern at the speed of 1 sheet/hour. |
| 6 | 06 | Panel check mode | Displays the name of key depressed on the operation panel. |
| 7 | 07 | Check pattern | Prints 2 sheets of check pattern. |
| 8 | 08 | Product check | Executes No. 6, No. 3, and No. 7 continuously. |
| 9 | 09 | Signal send mode | Sends modem signals sequentially. |
| 10 | 10 | Memory clear | Clears the backup memory contents to reset it to the initial state (default setting). |
| 11 | 11 | CCD adjust mode | Used for CCD adjustment. Executes copy operation. When the STOP key is pressed, the unit goes into the wait state. When the STOP key is pressed again, the unit starts operation again. |
| 12 | 12 | G3 comm. check | G3 direct connection mode. |
| 13 | 13 | TEL data send mode | Sends telephone list contents in DTMF signals. |
| 14 | 14 | TEL data recv mode | Receives telephone data and registers the contents. |
| 15 | 15 | Country select | Set the telephone system of each country. |
| 16 | 16 | Message print mode | Prints the displayed message |
| 17 | 17 | Soft switch print mode | Prints the soft switch settings. |
| 18 | 18 | Ring & Dial free | Reject dial tone check while autodialing is carried out. |

START KEY + STOP KEY + "Power ON" → Memory clear (Work area only)

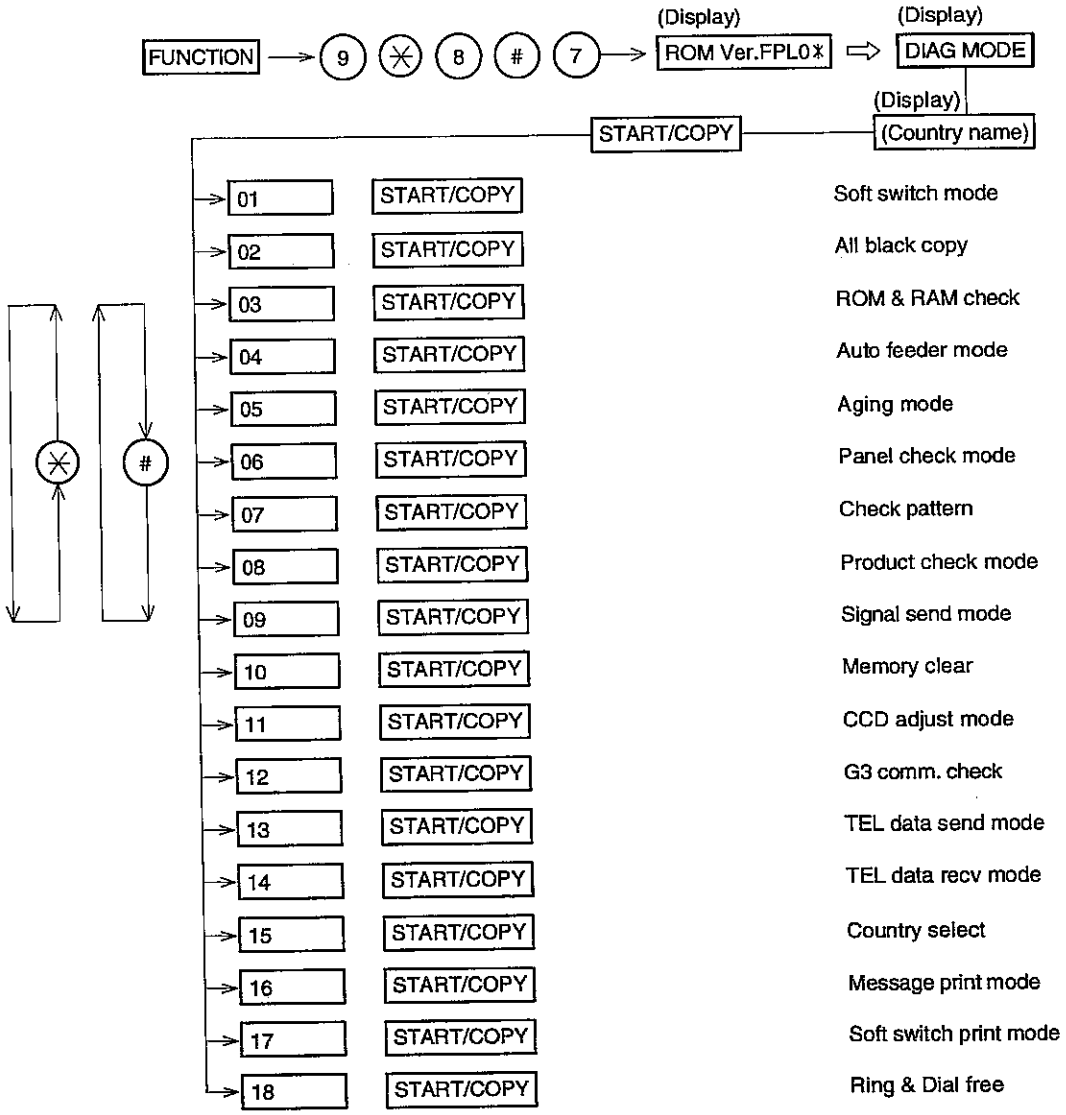
## 2. Operating procedure

Press [FUNC] → [9] → [✳] → [8] → [#] → [7] , and the following display will appear.

[ROM Ver. FPL0✳] After 2 sec: [DIAG MODE]

Then press the [START/COPY] key and country name selected by country select will appear. Select the desired item with the [✳] key and the [#] key or select with the rapid key. Enter the mode with the [START/COPY] key.

## (Diag.specifications)



## 3. Diagnostic items description

### 3.1. Rapid key 01: Soft switch setting mode

The soft switches are provided to allow setting of the operation modes with the operation panel. This key is used to set the soft switch setting. The contents of the soft switch setting is backed up.

### 3.2. Rapid key 02: All black copy

This key is used to print all the dots unconditionally.
The length of record is 2m. In any abnormality (without record paper, door open, etc.), however, the length may differ.

### 3.3. Rapid key 03: ROM & RAM check mode

This key is used to check the program ROM and the work RAM area. The check sum system is used for the ROM, and the matching test is used for the RAM. The results are given by an the alarm condition.

Error

| | | | |
|---|---|---|---|
| Short beep | One time | ⇨ | 1M ROM error |
| Short beep | Two times | ⇨ | 10K SRAM error |

### 3.4. Rapid key 04: Auto feeder test

This key is used to test the document feed.
After entering this mode, set an original and press the [START/COPY] key. The original size will be displayed and the operation will be started.

### 3.5. Rapid key 05: Aging mode

This key is used to print the check pattern at the rate of 1 sheet/hour. Printing operation will be terminated after printing 10 sheets.
If an original is set when this mode is started, copy is first made and aging follows.

### 3.6. Rapid key 06: Panel check mode

When a key on the operation panel is pressed, the corresponding display is shown.

### 3.7. Rapid key 07: Check pattern mode

This key is used to print 2 sheets of the check pattern.
This is useful to check the recording head state.

| | | |
|---|---|---|
| White/black (1 bit alternately) | ⇨ | About 35mm long |
| All black | ⇨ | About 70mm long |
| All white | ⇨ | About 35mm long |

### 3.8. Rapid key 08: Product check mode

This mode is used to perform No. 6 (panel check), No. 3 (ROM & RAM check) and No. 7 (Check pattern) continuously.

### 3.9. Rapid key 09: Signal send mode

This mode is used to send various signals to the line.
FAX signals are sent in the level set by the soft switch.
No Signal (CML ON) → 9600BPS → 7200 BPS → 4800BPS → 2400BPS → FLAG (300BPS) → 2100Hz → 1100Hz → END
This signals can be checked by plugging the handset into the TEL line connector on the rear of the machine.

### 3.10. Rapid key 10: Memory clear mode

This mode is used to clear the backup memory and reset to the default settings.
(Various registrations are cleared.)

### 3.11. Rapid key 11: CCD adjust mode

This mode is used to execute copy operation. When the stop key is pressed, the unit goes into the wait state to adjust the scanning line. When the STOP key is pressed again, the copy operation is resumed.

### 3.12. Rapid key 12: G3 direct connection mode

This mode is used to perform FAX communication regardless of the handset state.
If there is an original, transmission is performed. If there is no original, reception is performed.

### 3.13. Rapid key 13: TEL data send mode

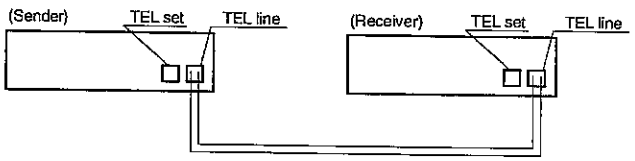
This mode is used to send the data registered in the telephone list in the DTMF signals and copy the registration contents. After sending all data, the telephone list is printed for confirmation.

### 3.14. Rapid key 14: TEL data recv mode

This mode is the reception mode of the above. The received data is registered in the telephone list. After receiving all data, it is printed for confirmation.

### DIAG TEL DATA SEND/RECV

**(Operating Procedure)**




1) Prepare two units of the facsimile and connect them directry with the line cable.
   (TEL line ⟷ TEL line)
2) Set to TEL DATA SEND and TEL DATA RECV in diag mode recpectively. Start the receiver unit, then start the transmitter unit. After completion of transmitting. "TELEPHONE # LIST" will be printed.

   (Purpose of use)
   This fanctions simplifies reentry of telephone numbers (50 stations in total) when replacing the control PWB or the set.

### 3.15. Rapid key 15: Country select

Used to set telephone line parameter from ROM to conform to the telephone system of each country.

Select the country with "✳", "#", keys.

Country setting (DIP SW No. 2 ON)
FRANCE Only

### 3.16. Rapid key 16: Message print mode

Used to print the displayed message of communication for translate each language.

### 3.17. Rapid key 17: Soft switch print mode

Used to print the soft switch settings statement.

### 3.18. Rapid key 18: Ring & Dial free

Used to reject dial tone check while autodialing is carried out. And used to change the bottom Ring frequency of auto-receiving to 13Hz.

## 4-1. Soft switch listing

Bit No. 7 6 5 4 3 2 1 0
Data No. 1 2 3 4 5 6 7 8
Display SW1= 0 0 0 0 0 0 0 0

Switch attribution U: User SW S: Soft SW X: Not work or reserved in that country

| SW No. | Data No. | Bit | Item | Switch setting and function | | | | | Switch attribution and default value | | | | | | | | | | | | | | | | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | | | 0 | DE | CH | AT | IT | ES | PT | BE | SE | NO | FI | DK | NL | HG | PL | CS | F | |
| SW1 | 1 | 7 | Line density selection | Fine | | | | Standard | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | |
| | 2 | 6 | Reserved | — | | | | — | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 3 | 5 | Communication result print-out (Transaction print) | | In error only | In send only | Always print | No print | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| | | | | No.3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 4 | 4 | | No.4 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 5 | 3 | Automatic switching from manual to auto receive mode | Reception after 5 calls | | | | No reception | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 6 | 2 | Automatic switching mode | TEL/FAX auto switch | | | | Switch to FAX | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | |
| | 7 | 1 | Reserved | — | | | | — | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 8 | 0 | Fax switching when answer recording full | YES | | | | NO | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | |
| SW2 | 1 | 7 | 300BPS flame check time | 6sec | | | | 3sec | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | |
| | 2 | 6 | Forced 4800 BPS reception | YES | | | | NO | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 3 | 5 | Remote reception time | 20sec | | | | 6sec | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 4 | 4 | CED tone signal interval | 500ms | | | | 75ms | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 5 | 3 | Reserved | — | | | | — | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 6 | 2 | Digital line equalization setting | YES | | | | NO | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | |
| | 7 | 1 | MODEM speed | | 9600BPS | 7200BPS | 4800BPS | 2400BPS | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | |
| | | | | No.7 | 1 | 1 | 0 | 0 | | | | | | | | | | | | | | | | | |
| | 8 | 0 | | No.8 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| SW No. | Data No. | Bit | Item | Switch setting and function 1 | Switch setting and function 0 | Switch attribution and default value DE | CH | AT | IT | ES | PT | BE | SE | NO | FI | DK | NL | HG | PL | CS | F | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW3 | 1 | 7 | Length limitation of copy/send/receive | No limit | Copy/Send: 1 m<br>Receive: 1.5 m | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 2 | 6 | Footer print | YES | NO | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 3 | 5 | Sender's phone number setting | Can not change | Change allowed | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 4 | 4 | CSI transmission | No transmitted | Transmitted | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 5<br>6<br>7<br>8 | 3<br>2<br>1<br>0 | No sound detection time in the A.M. mode | Binary input 8 4 2 1<br>No. = 5 6 7 8<br>0 1 1 0 | | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | U<br>0<br>1<br>1<br>0 | |
| SW4 | 1 | 7 | Reserved | — | — | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 2 | 6 | Dialing pause (sec/pause) | 4 sec | 2 sec | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>1 | S<br>0 | |
| | 3 | 5 | Error criterion | 10 ~ 20% | 5 ~10% | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 4 | 4 | DIS receive acknowledgement during G3 transmission | Twice | NSF signal: Once<br>DIS signal: Twice | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 5 | 3 | Non modulated carrier for V29 transmission mode | YES | NO | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 6 | 2 | EOL detect timer | 25 sec | 5 sec | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 7 | 1 | Protocol monitor | YES | NO | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 8 | 0 | Line monitor | YES | NO | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| SW5 | 1<br>2<br>3<br>4 | 7<br>6<br>5<br>4 | Signal transmission level | Binary input 8 4 2 1<br>No. = 1 2 3 4<br>1 0 1 0 (–10dBm) | | S<br>0<br>0<br>0<br>1 | S<br>1<br>0<br>0<br>0 | S<br>0<br>0<br>0<br>1 | S<br>0<br>1<br>1<br>0 | S<br>0<br>0<br>1<br>1 | S<br>1<br>1<br>0<br>0 | S<br>0<br>0<br>1<br>0 | S<br>1<br>1<br>0<br>0 | S<br>0<br>1<br>0<br>0 | S<br>1<br>1<br>0<br>1 | S<br>1<br>0<br>0<br>1 | S<br>1<br>0<br>0<br>1 | S<br>1<br>0<br>0<br>0 | S<br>1<br>0<br>0<br>0 | S<br>1<br>0<br>0<br>0 | S<br>1<br>0<br>0<br>0 | |
| | 5 | 3 | Sender's information transmit | NO | YES | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 6 | 2 | H2 mode | NO | YES | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 7 | 1 | Reading slice (binary) | Factory setting / Light / Dark / Lighter<br>No.7: 0 / 1 / 0 / 1 | | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | S<br>0 | |
| | 8 | 0 | | No.8: 0 / 0 / 1 / 1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| SW No. | Data No. | Bit | Item | Switch setting and function | | | | | Switch attribution and default value | | | | | | | | | | | | | | | | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | | | 0 | DE | CH | AT | IT | ES | PT | BE | SE | NO | FI | DK | NL | HG | PL | CS | F | |
| SW6 | | | | | Factory setting | Light | Dark | Lighter | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| | 1 | 7 | Reading slice (half tone) | No.1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 2 | 6 | | No.2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 3 | 5 | Character detection sensitivity setting in half tone mode | Strong | | | | Weak | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 4 | 4 | Reserved | — | | | | — | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 5 | 3 | Communication error treatment in RTN sending (reception) | No communication error | | | | Communication error | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | | | | | 50 ms | 80 ms | 100 ms | 120 ms | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| | 6 | 2 | DTMF detection time | No.6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 1 | | No.7 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 8 | 0 | Protection of remort reception (5, ✳) detect | YES | | | | NO | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| SW7 | | | | | 15 s | 30 s | 60 s | 120 s | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| | 1 | 7 | Pseudo ringing time at Phone/Fax automatic switching mode | No.1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 2 | 6 | | No.2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | | | | −10dB Normal | −15dB Lower | −5dB Louder | 0dB Loud | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| | 3 | 5 | Pseudo ringer sound volume (TEL/FAX selection) | No.3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 4 | 4 | | No.4 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 5 | 3 | CNG transmission | NO | | | | YES | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 6 | 2 | Remote reception with G.E. telephone | YES | | | | NO | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | |
| | | | | | ID | ID | EARTH | FLASH | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| | 7 | 1 | PBX select | No.7 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 8 | 0 | | No.8 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| SW No. | Data No. | Bit | Item | Switch setting and function 1 | Switch setting and function 0 | Switch attribution and default value DE | CH | AT | IT | ES | PT | BE | SE | NO | FI | DK | NL | HG | PL | CS | F | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW 8 | 1 | 7 | Number of CNG signal detection at the TEL/FAX automatic switching mode | Twice | Once | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 2 | 6 | Reserved | — | — | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | | | | Twice / 4 times / 6 times / 10 times | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| | 3 | 5 | Busy tone detecting pulse number | No.3: 0 / 0 / 1 / 1 | | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 4 | 4 | | No.4: 0 / 1 / 0 / 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | | | | | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | AT only once |
| | 5 | 3 | Recall times | Binary input 8 4 2 1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 6 | 2 | | No.= 1 2 3 4 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 1 | | 0 0 1 0 (Twice) | | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 8 | 0 | | | | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | | | | | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| | 1 | 7 | Number of rings for auto receive | Binary input 8 4 2 1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 2 | 6 | | No.= 1 2 3 4 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 3 | 5 | | 0 0 0 1 (Once) | | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| SW 9 | 4 | 4 | | 0 0 1 0 (Twice) | | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | |
| | | | | | | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| | 5 | 3 | Remote operation code figures by external TEL (0~9) | Binary input 8 4 2 1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 6 | 2 | | No.= 5 6 7 8 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 7 | 1 | | 0 1 0 1 (5 ✳) | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 8 | 0 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| SW 10 | 1 | 7 | CI detection | 13Hz or more | as is PTT | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 2 | 6 | Dial tone detection (before auto dial) | NO | YES | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 3 | 5 | Line current detection (before auto dial) | NO | YES | S 0 | S 1 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 1 | S 0 | S 0 | S 0 | S 0 | |
| | 4 | 4 | Busy tone detection (after auto dial) | NO | YES | S 0 | S 0 | S 0 | S 0 | S 1 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | | | | | | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| | 5 | 3 | Quiet detect start timing | Binary input 8 4 2 1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 6 | 2 | | No.= 5 6 7 8 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 1 | | 0 0 0 0 (0 sec) | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 8 | 0 | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| SW No. | Data No. | Bit | Item | Switch setting and function | | | | | Switch attribution and default value | | | | | | | | | | | | | | | | | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | | 0 | | DE | CH | AT | IT | ES | PT | BE | SE | NO | FI | DK | NL | HG | PL | CS | F | |
| SW 11 | 1 | 7 | OGM detect timer (only in A.M. parallel connection mode) | | Not work | 100 ms | 200 ms | 300 ms | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | AT, DE only |
| | | | | No.1 | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | |
| | 2 | 6 | | No.2 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 3 | 5 | Connection select in A.M. mode | Parallel connection | | | External jack connection | | S 1 | S 0 | S 1 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 4 | 4 | Busy tone detection (TEL/FAX, A.M. only) intermittent sound detection | NO | | | YES | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 5 | 3 | Busy tone detection in A.M. mode | YES | | | NO | | S 1 | S 0 | S 1 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 6 | 2 | Busy tone detection in TEL/FAX mode | YES | | | NO | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 7 | 1 | Reserved | — | | | — | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 8 | 0 | Corresponding of summer time | NO | | | YES | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| SW 12 | 1 | 2 | Busy tone detection after ring back tone (only CH) | NO (in case of no noise) | | | YES | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 2 | 6 | PBX CONNECTION | YES | | | NO | | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | U 0 | |
| | 3 | 5 | PBX recall function | | No operation | No operation | EARTH | FLASH | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 | |
| | | | | No.3 | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | |
| | 4 | 4 | | No.4 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 5 | 3 | Reserved | — | | | — | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 6 | 2 | Waiting time after dialing | 90 s | | | as is PTT | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | 7 | 1 | No D.P. dialing | YES | | | NO | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 1 | S 1 | S 0 | S 1 | S 0 | S 0 | S 0 | S 0 | S 0 | NO, DK, SE only |
| | 8 | 0 | A.M. mode | NO | | | YES | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |
| | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| SW 13 | 1 | 7 | Reserved | — | | | — | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 2 | 6 | Reserved | — | | | — | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 3 | 5 | Reserved | — | | | — | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 4 | 4 | Remote reception (5 ✳) under parallel connection | YES | | | NO | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | AT, DE only |
| | 5 | 3 | Number of CNG signal detection in answering machine mode | | Once | Twice | 3 times | 4 times | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | S 1 | |
| | | | | No.5 | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | |
| | 6 | 2 | | No.6 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 1 | Auto gain control (MODEM) | Enable | | | Disable | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 8 | 0 | Remort reception by 5 0 ✳ | YES | | | NO | | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | S 0 | |

## 4-2. Soft switch functional description

**SW1 No.1 Line density choice**

Used to set the transmission mode which is automatically selected when the MODE key is not pressed. In the copy mode, however, the fine mode is automatically selected unless the MODE key is manually set to another mode.

**SW1 No.2 Reserved**

Set to "0"

**SW1 No.3 No.4 Communication results print-out (Transaction report)**

It is possible to obtain transaction results after each communication. Normally, the switch is set (No.3:0, No.4:0) so that the transaction report is produced only when a communication error is encountered. If No.3 was set to 1 and No.4 to 0, the transaction report will be produced every time a communication is done, even if the communication was successful.
Setting No.3 to 1 and No.4 to 1 will disable this function. No transaction report printed.
No.3:0 N0.4:1=TX ONLY Report Print

**SW1 No.5 Automatic switching from manual to auto receive mode**

This soft switch is used to select whether the machine should switch to the auto receive mode after 5 rings in the manual receive mode or remain in the manual mode. When the soft switch is set to "1", the machine operates in the same way as SW9 No.1 No.2 No.3 No.4 "0" "1" "0" "0" (5 rings).

**SW1 No.6 Automatic switching mode**

This soft switch is used to set the auto tel/fax select mode or to set the normal fax mode.

**SW1 No.7 Reserved**

Set to "0"

**SW1 No.8 Fax switching when answer recording full**

Used to disable or enable the function of OFF-HOOK hold.
If the answering machine's memory (tape) is full and there is no responce, the machine automatically switches to Fax reception. The OFF-HOOK hold time (Answering machine operating time) is set by normal operation.

**SW2 No.1 300 BPS flame check time**

Communication command wait time setting (Used by technical engineers. For the market, fixed to 6S.) Default setting: 6S

**SW2 No.2 Forced 4800 BPS reception**

When line conditions warrant that receptions take place at 4800 BPS repeatedly. It may improve the success of receptions by starting at 4800 BPS. This improves the receiving document quality and reduces handshake time due to fallback during training.

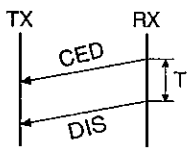
**SW2 No.3 Remote reception time**

Time from the start of calling bell to enabling remote reception (5*). If the call is received (including external – connection TEL), this function does not work.

**SW2 No.4 CED tone signal interval**

For international communication, the 2100Hz CED tone may act as an echo suppression switch, causing a communication problem.
Though this soft switch is normally set to "0", it should be set to "1" so as to change the timer between the CED tone and DIS signal from 75ms to 500ms to eliminate the communication problem caused by echo.

"0" set: T=75ms
"1" set: T=500ms




**SW2 No.5 Reserved**

Set to "0"

**SW2 No.6 Line equalization setting**

Line equalization is to be set according to the line characteristics.
Setting should be made according to the distance between the telephone and the telephone company central switching station.

**SW2 No.7, No.8 MODEM speed**

Used to determine the initial modem speed. The default is 9600bps. It may be necessary to program it to a slower speed when frequent line fallback is encountered, in order to save the time required for fallback procedure.

**SW3 No.1 Length limitation of copy/send/receive**

Used to set the maximum page length.
To avoid possible paper jam, the page length is normally limited to 1 meter for copy or transmit, and 1.5 meters for receive.
It is possible to set it to "No limit" to transmit a long document, such as a computer print form, etc. (In this case, the receiver must also be set to no limit.)

**SW3 No.2 Footer print**

When set to "1", the date of reception, the sender machine No., and the page No. are automatically recorded at the end of reception.

**SW3 No.3 Sender's phone number setting**

Used to make a choice of whether the registered sender's phone number can be changed or not. If the switch is set to "1", new registration of the sender's phone number is disabled to prevent accidental wrong input.

**SW3 No.4 CSI transmission**

CSI signal contains the sender's phone number registered in the machine. If this switch is set to "1", no sender's name will be printed at the receiving side.

**SW3 No.5 – No.8 No sound detection time in the A.M. mode**

When an answering machine is connected, if a no sound state is detected for a certain period of time, the machine judges it as a transmission from a facsimile machine and automatically switches to the Fax mode.

**SW4 No.1 Reserved**

Set to "0".

**SW4 No.2 Dialing pause**

Pauses can be inserted between telephone numbers of direct dial connection. Selection of 4 sec or 2 sec pause is available.

**SW4 No.3 Error criterion**

Used to select error criterion for sending back RTN when receiving image data.

**SW4 No.4 DIS receive acknowledgment during G3 transmission**

Used to make a choice of whether reception of DIS (NSF) is acknowledged after receiving two DISs (NSFs) or receiving one DIS (two NSFs).
It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

**SW4 No.5 Nonmodulated carrier for V29 detection modem**

Though transmission of a non-modulated carrier is not required for transmission by the V29 modem according to the CCITT Recommendation, it may be permitted to a send non-modulated carrier before the image signal to avoid an echo suppression problem.
It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

**SW4 No.6 EOL (End Of Line) detect timer**

Used to make a choice of whether to use the 25-second or 5-second timer for detection of EOL.
This is effective to override communication failures with some facsimile models that have longer EOL detection.

**SW4 No.7 Protocol monitor**

Normally set to "0". If set to "1", communication can be checked, in case of troubles, without using a G3 tester or other tools.
When communication FSK data transmission or reception is made, the data is taken into the buffer. When communication is finished, the data is analized and printed out. When data is received with the line monitor (SW4-No. 8) set to "1 the reception level is also printed out.

**SW4 No.8 Line monitor**

Normally set to "0". If set to "1", the transmission speed and the reception level are displayed on the LCD. Used for line tests.

**SW5 No.1 ~ No.4 Signal transmission level**

Used to control the signal transmission level in the range of –1dB to –15bB.

**SW5 No.5 Sender's information transmit**

If this switch is set to "1", no sender's information will be printed at the receiving side.

**SW5 No.6 H2 mode**

Used to determine reception of H2 mode (15 sec transmission mode). When set to OFF, H2 mode reception is inhibited even though the transmitting machine has H2 mode function.

**SW5 No.7, No.8 Reading slice (binary)**

Used to determine the set value of reading density in standard/fine mode. The standard setting is "00". (Factory setting is "00".)

**SW6 No.1, No.2 Reading slice (half tone)**

Used to determine the set value of reading density in half tone mode. The standard setting is "00" (Factory setting is "00").

**SW6 No.3 Character detection sensitivity setting in half tone mode**

In the half tone mode, image area is separated from character area and processed separately to eliminate unclear character transmission. This switch is used to change the criteria of judgement of separation. When "Strong" (=1) is selected, more area is judged as character area, providing clearer characters.
On the contrary, however, edges of image area may be emphasized.
It is advisable to restrict the use of this function only when clear characters must be transmitted, and to use the function of "Weak" (=0) for general use.

**SW6 No.4 Reserved**

Set to "0".

**SW6 No.5 Communication error treatment in RTN sending (reception)**

Used to determine communication error treatment when RTN is sent by occurrence of a received image error in G3 reception. When it is set to "1", communication error is judged as no error.

**SW6 No.6, No.7 DTMF detection time**

Used to set detect time of DTMF (Dual Tone Multi Frequency) used in remote reception (5, ✳).
The longer the detect time is, the less the error detections are caused by noises.

**SW6 No.8 Protection of remote reception (5, ✳) detect**

Used to set the function of remote reception (5, ✳). When set to "1", the remote reception function is disabled.

**SW7 No.1 No.2 Pseudo ringing time at Phone/Fax automatic switching mode**

Choice is made as to how long to rumble the dummy ringer on TEL/FAX automatic switching mode.

**SW7 No.3, No.4 Pseudo ringer sound volume (TEL/FAX selection)**

Used to adjust sound volume of pseudo-ringer (ring back tone) generated on selecting TEL/FAX.

**SW7 No.5 CNG transmission**

When set to "0", this model allows CNG transmission by pressing the start key in the key pad dialing mode. When set to "1", CNG transmission in the key pad dialing mode cannot be performed. In either case, CNG transmission can be performed in the auto dial mode.

**SW7 No.6 Remote reception (G.E. telephone)**

"1": Compatible with TEL made by GE
"0": Not compatible (Initial setting)

- When sending (5, ✳) for remote reception with a GE manufactured telephone, remote reception may not take place because of special specifications in their DTMF.
  To overcome this, a soft SW is provided to change the modem setting to allow for remote reception.
- If this soft SW is set to "1", other telephone sets may be adversely affected. So the default value is "0"

**SW7 No.7 ~ No.8 PBX select**

These bits is used to select the method of access to a public line when FO-130 is connected to a PBX. Select "10" for access by the Earth key, "11" for access by the FLASH, and "00", "01" for access by the PBX ID digit.

**SW8 No.1 Number of CNG signal detection at the TEL/FAX automatic switching mode**

Use for detection of CNG in one tone or two tones in the TEL/FAX automatic switching mode.

**SW8 No.2 Reserved**

Set to "0".

**SW8 No.3 – No.4 Recall interval**

Choice is made for a redial interval for speed and rapid dial calls. Use a binary number to program this. If set to 0 accidentally, 1 will be assumed. If a number above 5 was entered, it will be set to 5. In this case, it has to be corrected.

**SW8 No.5 ~ No.8 Recall times**

Choice is made as to how many redials should be made. Use a binary number to program it. If set to 0 or 1 by accident, the redial number will be set to 2. If a number above 9 was entered, it will be set to 9.

**SW9 No.1 ~ No.4 Number of rings for auto receive**

When the machine is set in the auto receive mode, the number of rings before answering can be selected. It may be set from one to nine rings using a binary number. Since the facsimile telephone could be used as an ordinary telephone if the handset is taken off the hook, it should be programmed to the user's choice. If the soft switch was set to 1, direct connection is made to the facsimile. If a facsimile calling beep was heard when the handset is taken off the hook, press the START/COPY key and put the handset on the hook to have the facsimile start receiving. If it was set to 0 accidentally, receive ring is set to 1. If it was above 9, receive rings are set to 9.

**SW9 No.5 ~ No.8 Remote operation code figures by external TEL**

Remote operation codes can be changed from 0 through 9. If set to greater than 9, it defaults to 9. The "✳" is not changed and the new function becomes, number programmed plus ✳.
Ex – 7 ✳ (Default: "5" "✳".)

**SW10 No.1: CI detection**

Ring signal for auto reception is set.
When this switch is set to "1," PTT standards are set.

**SW10 No.2: Dial tone detection**

This is used to set YES/NO of dial tone detection in auto dialing.

**SW10 No.3: Line current detection**

This is used to set YES/NO of line current detection in auto dialing.

**SW10 No.4: Busy tone detection**

This is used to set busy tone detection in auto dialing.

**SW10 No.5 ~ No.8 Quiet detect start time**

Inserts a pause before commencing quiet detection.

(Busy tone detection)
The busy tone detection is a function to detect the odf state of the remote side during operation in the answering machine mode or the TEL/FAX auto change mode and to interrupt the operation.
Soft SW11-1 ~ 4.8 provide variation in busy tone detection ways to cope with various busy tone signals by setting the soft switches because there are several kinds of busy tone signals in the U.S. telephone line.

**SW11 No.1, No.2 OGM detect timer**

Only AT, DE version, A.M. mode is working after detecting OGM of Answering machine.
This is used to change the detection time of OGM or cancel to detect the OGM.

**SW11 No.3 Connection select in A.M. mode**

This is select how to enter to A.M. mode. If select "0", A.M. mode is working after detecting Answering machine hook-up.
If select "1", A.M. mode is working after detecting OGM of Answering machine.

**SW11 No.4 Busy tone detection intermittent sound detection**

Line off detection YES/NO is set.

**SW11 No.5 Busy tone detection in A.M. mode**

This is used to set YES/NO of line open by busy tone detection during answering machine connection mode operation.

**SW11 No.6 Busy tone detection in TEL/FAX mode**

This is used to set YES/NO of line open by busy tone detection during TEL/FAX switching is working.

**SW11 No.7 Reserved**

Set to "0".

**SW11 No.8 Corresponding of summer time**

This is used to set YES/NO of automatic clock adjustment for European summer time.

**SW12 No.1 Busy tone detection after ring back tone**

This is used to set YES/NO to enter the Recalling mode when detect Busy Tone after ring back tone.

**SW12 No.2 PBX connection**

Used to select according to the connected line: PBX (Private Branch Exchange).
If set to 1 (=PBX), PBX ID digit is automatically added when dialling to external line. (For details, refer to the instruction manual.)

**SW12 No.3, No.4 P.B.X. recall function (R key)**

Thiese bits are used to set the operation mode of P.B.X. recall Setting is made according to the type of P.B.X. (FRANCE: Only Flash)
Bit 5=1, bit 4=1: Time break recall is performed.
The P-relay on the L.I.U. is driven to initiate recall.
Bit 5=1, bit 4=0: Earth recall is performed. The E-relay on the L.I.U. is driven to initiate recall.

**SW12 No.5 Reserved**

Set to "0".

**SW12 No.6 Waiting time after dialling**

This is the time waiting for the opponen'ts signals after dialling. For the Switzerland version, the time is fixed to 90 sec regardless of this switch setting.

**SW12 No.7 No D.P. dialing**

This is used to set YES/NO to disable D.P. dialling.

**SW12 No.8 A.M. mode**

This is used to set YES/NO to enable or disable the A.M. mode.

**SW13 No.1 ~ No.3 Resetted**

Set to "0".

**SW13 No.4 Remote reception (5, ✳) under parallel connection.**

This is used to set YES/NO to have remote reception function under parallel connection. (only AT, DE)

**SW13 No.5 No.6 Number of CNG signal detection in answering machine mode.**

Used for detection of CNG in 1 ~ 4 pulses in answering machine mode.

**SW13 No.7 Auto gain control (MODEM)**

When this mode is enabled, if the reception signal level is under 31dBm. The modem it self controls the signal gain automatically.

**SW13 No.8 DTMF 3 digits at remote reception**

Used to make a choice of whether to use the 3 digits code or 2 digits code for remote receive.
If this switch is set "1," the 3 digits code is the following.

0✳ → 00✳
1✳ → 10✳
2✳ → 20✳
⋮ ⋮
9✳ → 90✳

# [3] TROUBLESHOOTING

Refer to the following actions to troubleshoot any of problems mentioned in 1-6.

[1] A communication error evoked.
[2] Image distortion produced.
[3] Unable to do overseas communication
[4] Communication speed slow liable to fallback.

- Increase the transmission level SOFT SWITCH 5-1 2 3 4
  Can be used in case [1] [2] [3]
- Decrease the transmission level SOFT SWITCH 5-1 2 3 4
  Can be used in case [3]
- Apply line equalization SOFT SWITCH 2-6
  Can be used in case [1] [2] [3] [4]
- Slow down the transmission speed SOFT SWITCH 2-7, 8
  Can be used in case [2] [3]
- Replace the LIU PWB.
  Can be used in all cases.
- Replace the control PWB.
  Can be used in all cases.

* If transmission problems still exist on the machine, use the following format and check the related matters.

TO: ATT: Ref.No. :

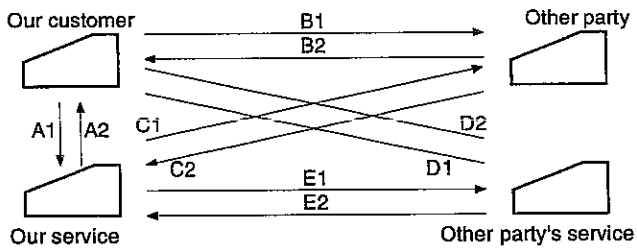
CC: ATT: Date :

FM: Dept :

Sign :

| ***** Facsimile communication problem ***** | | | Ref.No.: |
|---|---|---|---|
| From: Mr. | Fax Tel No.: | | Date: |
| Our customer | Name | | Tel No. |
| | Address | | Fax No. |
| | Contact person | | Model name |
| Other party | Name | | Tel No. |
| | Address | | Fax No. |
| | Contact person | | Model name |
| Problem mode | Line: Domestic / international | Mode: G3 | Phase: A. B. C. D. |
| | Reception / Transmission | Automatic reception / Manual reception | |
| | | Automatic dialing / Manual dialing / Others | |
| Frequency: | | % | ROM version: |

Confirmation item




Please mark problem with an X
No problem is: 0

| A1 | A2 | B1 | B2 | C1 | C2 | D1 | D2 | E1 | E2 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

Transmission level setting is ( ) dB at our customer

Transmission level ( ) dBm
Reception level ( ) dBm
By level meter at B1 and B2

Comment

Counter-measure

**** Please attach the G3 data and activity report on problem. ****

# [4] Error code table

**G3 Transmission**

| Code | Final received signal | Error Condition (Receiver side) |
|---|---|---|
| 0 | Incomplete signal frame | Cannot recognize bit stream after flag |
| 1 | NSF, DIS | Cannot recognize DCS signal by echo etc.<br>Cannot recognize NSS signal (FIF code etc) |
| 2 | CFR | Disconnects line during reception (carrier missing etc) |
| 3 | FTT | Disconnects line by fall back |
| 4 | MCF | Disconnects line during reception of multi page<br>Cannot recognize NSS, DCS signal in the case of mode change |
| 5 | PIP or PIN | No response in receiver side to picture signal after no response in transmitter side to receive TALK mode request |
| 6 | RTN or RTP | Cannot recognize NSS, DCS signal after transmit RTN or RTP signal. |
| 7 | No signal or DCN | No response in receiver side or DCN signal received* (transmitter side) |

**G3 Reception**

| Code | Final received signal | Error Condition (Transmitter side) |
|---|---|---|
| 0 | Imcomplete signal frame | Cannot recognize bit stream after flag |
| 1 | NSS, DCS | Cannot recognize CFR or FTT signal<br>Disconnects line during transmission (line error) |
| 2 | NSC, DTC | Cannot recognize NSS signal (FIF code etc) |
| 3 | EOP | Cannot recognize MCF, PIP, PIN, RTN, RTP signal |
| 4 | EOM | Cannot recognize MCF, PIP, PIN, RTN, RTP signal in the case of mode change |
| 5 | MPS | Cannot recognize MCF, PIP, PIN, RTN, RTP signal in the case of multi page |
| 6 | PR1-Q | Cannot recognize PIP, PIN signal in the case of TALK request |
| 7 | No signal or DCN | No response in transmitter (cannot recognize DIS signal) or DCN signal received* (receiver side) |

# CHAPTER 3. MECHANISM BLOCKS

## [1] General description

### 1. Document feed block and diagram

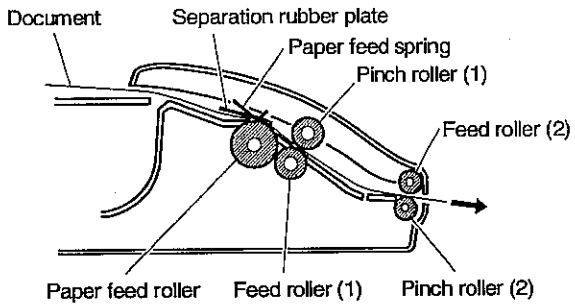



Fig. 1

### 2. Document feed operation

1) The document placed in the hopper actuates the document sensor. After one second, the pulse motor starts to drive the paper feed roller. The document is automatically taken up into the machine, and stopped at the document sensor.
2) When a specified number of pulses are received from the document sensor after the document lead edge is sensed, scanning is started.
3) When a specified number of pulses are received from the document sensor after the document rear edge is sensed, scanning is terminated and the document is fed through.
4) If the document sensor is active (i.e., another document is in the hopper), when the preceding document scanning is completed and and it is fed out, the next document is taken up into the machine. If the document sensor is not active (i.e., there is no document in the hopper), when the document is fed out, the operation is terminated.

### 3. Hopper mechanism

### 3-1. General view

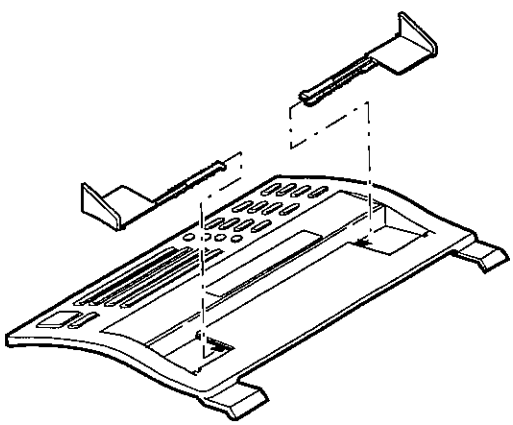


Fig. 2

The hopper is used to align documents with the document guides adjusted to the paper width.

NOTE: Adjust the document guides before and after inserting the document.

### 3-2. Automatic document feed

1) Use of the paper feed roller and separation rubber plate ensures error-free transport and separation of documents. The plate spring presses the document to the paper feed roller to assure smooth feeding of the document.
2) Document separation method: Separation rubber plate

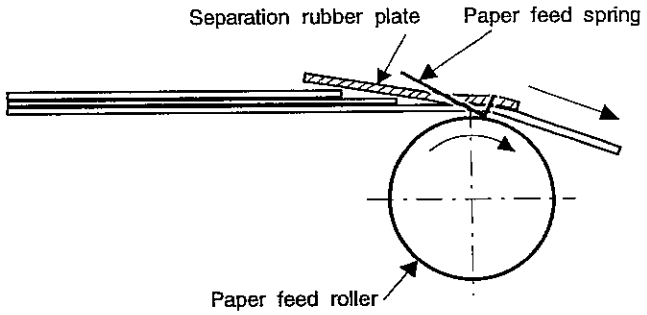



Fig. 3

### 3-3. Documents applicable for automatic feed

| | 4x6 series (788mm x 1091mm x 1000mm sheets) | | Square meter series | |
|---|---|---|---|---|
| | Minimum | Maximu | Minimum | Maximu |
| Paper weight | 45kg | 90kg | 52g/m2 | 104g/m2 |
| Paper thickness (ref.) | 0.06mm | 0.12mm | 0.06mm | 0.12mm |
| Paper size | B6 (128mm x 182mm) ~ A4 (210mm x 297mm), Letter (216mm x 279mm) | | | |
| Paper quality | High quality paper or equivalent | | | |
| Feeder capacity | 10 sheets, max. | | | |

NOTE: Double-side coated documents and documents on facsimile recording paper should be inserted manually.

Documents corresponding to a paper weight heavier than 90kg (104g/m$^2$) and lighter than 135kg (157g/m$^2$) are acceptable for manual feed.

Documents heavier than 135kg in terms of the paper weight must be duplicated on a copier to make it operative in the facsimile.

### 3-4. Loading the documents

1) Make sure that the documents are of suitable size and thickness, and free from creases, folds, curls, wet glue, wet ink, clips, staples and pins.
2) Place documents face down in the hopper.
   i) Adjust the document guides to the document size.
   ii) Align the top edge of documents and gently place them into the hopper. The first page under the stack will be taken up by the feed roller to get ready for transmission.

NOTES: 1) Curled edge of documents, if any, must be straighten out.
2) Do not load the documents of different sizes and/or thicknesses together.

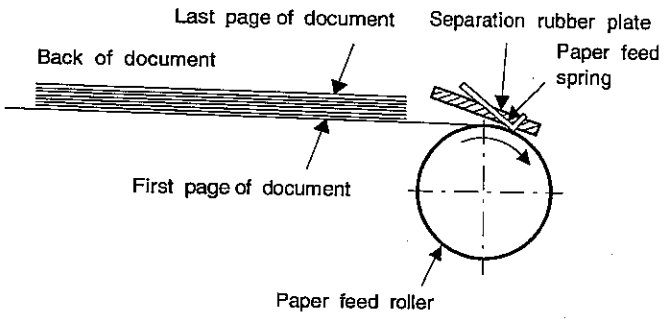



Fig. 4

### 3-5. Documents requiring use of document carrier

1) Documents smaller than B6 (128mm x 182mm).
2) Documents thinner than the thickness of 0.06mm.
3) Documents containing creases, folds, or curls, especially those whose surface is curled (maximum allowable curl is 5mm).
4) Documents containing tears.
5) Carbon-backed documents. (Insert a white sheet of paper between the carbon back and the document carrier to avoid transfer of carbon to the carrier.)
6) Documents containing an easily separable writing material (e.g., those written with a lead pencil).
7) Transparent documents.
8) Folded or glued documents.
   Document in document carrier should be inserted manually into the feeder.

## 4. Document release

### 4-1. Cross section view

(RIGHT SIDE)

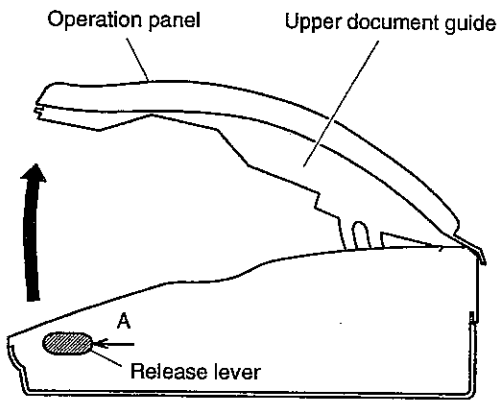



Fig. 5

### 4-2. General

When the release lever is pulled by hand in the direction of arrow A, the latch is released and the upper document guide moves on its axis in the direction of the arrow. The feed rollers, the separation rubber plate, and the pinch rollers become free to make it possible to remove the document.

## 5. Optical system

### (1) General view

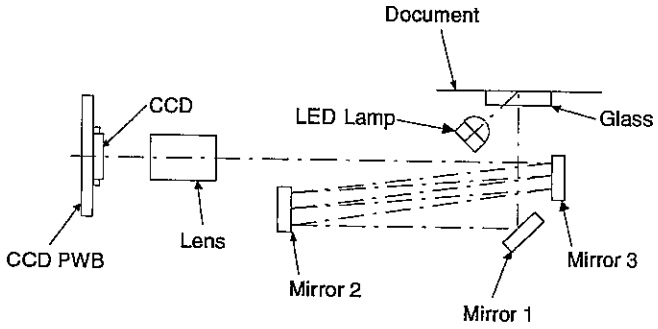



Fig. 6

### (2) Composition

The optical system is composed of the document feed mechanism, the lamp, the reflecting mirrors, the focusing lens, the CCD sensor, and the read process circuit.

### 5-1. Lamp

The lamp is used to expose the document.

### 5-2. Lens

The lens is used to focus the light reflected from the document on the CCD elements.

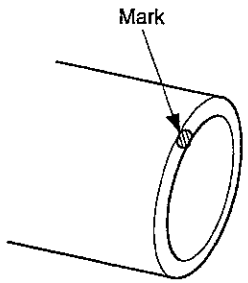



Fig. 7

### 5-3. CCD

The CCD (charge coupled device) image sensor consists of a photodiode array which converts the intensity of light reflected from the document surface into series of analog voltages which are then stored in an analog shift register. The series of analog voltages are then converted into a digital equivalent by a black/white binary logic circuit.

(Example) Scan signal output waveform

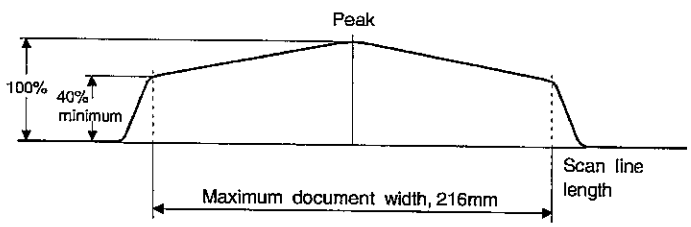



Fig. 8

1) The minimum output from the CCD at the maximum scan width of document (216mm) must be more than 40% of the peak value.
2) The peak output must be about 200mV under room temperature to avoid CCD saturation.

## 6. Recording block

### (1) General view

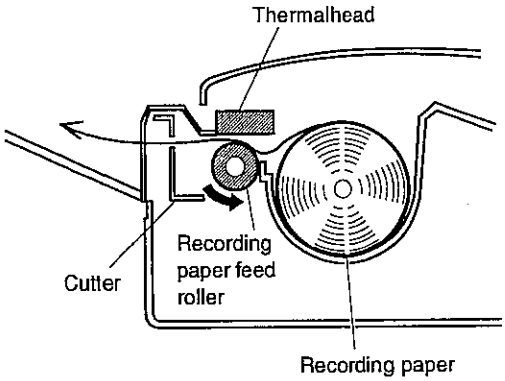



Fig. 9

### 6-1. Driving

Via the pulse motor gear shaft, the reduction gear, and the recording paper feed gear, rotation of the pulse motor is conveyed to the recording paper feed roller to feed the recording paper.

### 6-2. Recording

Use of the thermalhead permits easier maintenance and low operating costs.

#### 1) Thermalhead

The thermalhead consists of 1728 dot heat elements arranged in a single row and has the resolution of 8 dots/mm. The maximum recording speed is 10ms/line. The thermalhead also incorporates a 1728-dot shift register latch and an output control driver circuit. Low power consumption is achieved by dividing the head into nine segments.

#### 2) Structure of the recording mechanism

Recording is accomplished by pressing the thermalhead on the recording paper against the paper feed roller.

The main scan (horizontal) is electronically achieved, while the sub-scan (vertical) is achieved by moving the recording paper by the recording paper feed roller.

Usually, the cause for uneven print tone is caused by misalignment of the thermalhead or uneven contact with the roller.
It can be checked in the following manner.

1) Check if the thermalhead power and signal cables are properly routed.
2) Check that the thermalhead pivot moves smoothly up and down.
3) Check that the thermalhead support bracket is secured without any play.
4) Check to see that the recording paper feed roller has proper concentricity, in the case of a print tone variation evenly repeated down the page.
5) Replace the thermalhead with a new one and check to see if the same trouble occurs.

## [2] Disassembly and assembly procedures

- This chapter mainly describes the disassembly procedures. For the assembly procedures, reverse the disassembly procedures.
- Easy and simple disassembly/assembly procedures of some parts and units are omitted. For disassembly and assembly of such parts and units, refer to the Parts List.
- The numbers in the illustration, the parts list and the flowchart in a same section are common to each other.
- To assure reliability of the product, the disassembly and the assembly procedures should be performed carefully and deliberately.

### 1 Rear cover, handset holder ass'y

a. Remove the rear cover and the handset holder ass'y.

<Note 1> How to remove handset holder ass'y ⑤.
Push and remove pawl Ⓑ in the right side in the arrow direction shown in the enlarged view. Then push and remove pawl Ⓑ on the left side.

Parts list (Fig. 1)

| No. | Part name | Q'ty |
|---|---|---|
| 1 | Lower cabinet | 1 |
| 2 | Screw (black) | 2 |
| 3 | Rear cover | 1 |
| 4 | Screw (3×10, black) | 3 |
| 5 | Handset holder ass'y | 1 |
| 6 | Hook switch lever | 1 |
| 7 | Hook switch spacer | 1 |
| 8 | Screw | 1 |
| 9 | Spool | 1 |
| 10 | Spool spring | 1 |

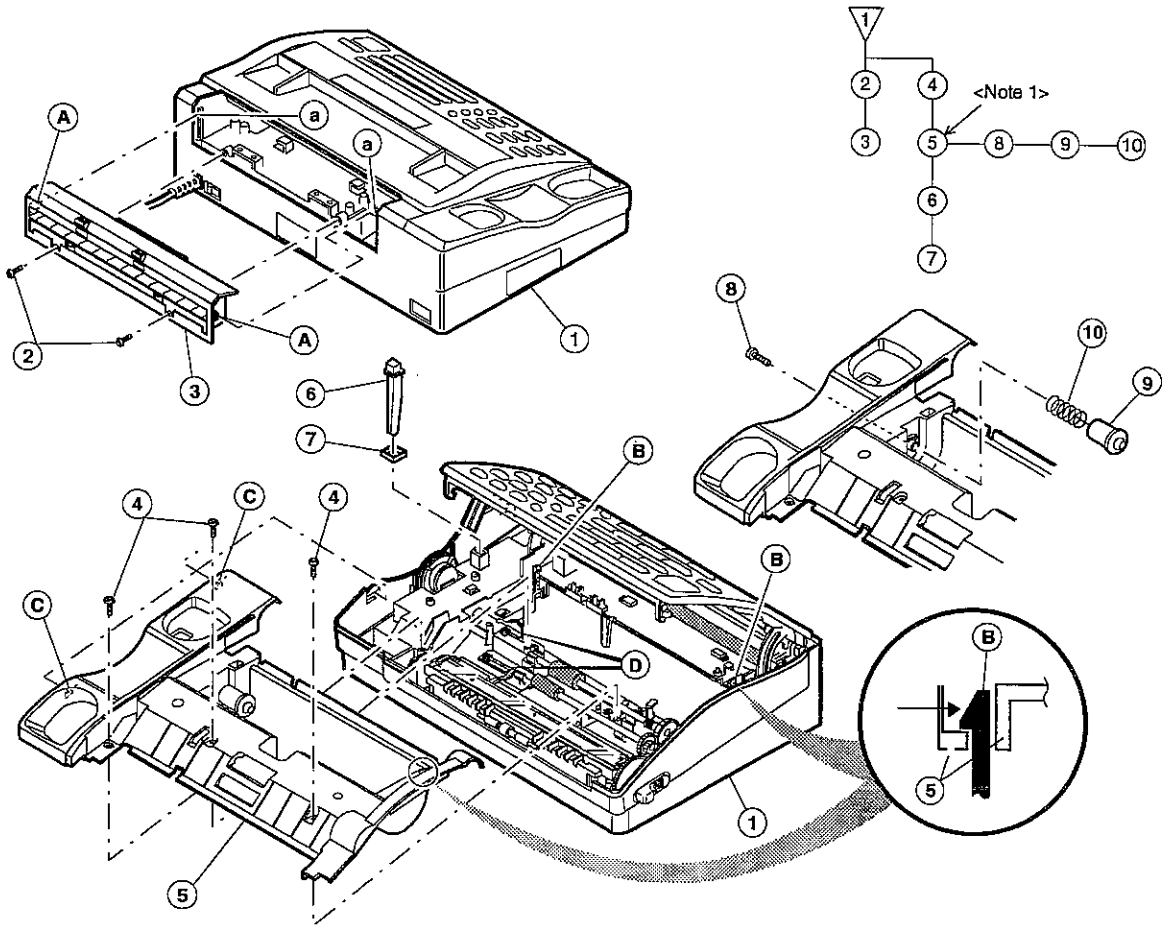



Fig. 1

**[Note for assembly]**

1. When assembling handset holder ass'y ⑤ in Fig. 1, note the following items.
   - Insert two pawls Ⓒ in Fig. 1 into the groove in the lower cabinet.
   - Put the right edge of the handset holder cabinet inside the lower cabinet.
   - Lock two pawls Ⓑ in Fig. 1 securely.
   - Check that three sensor levers Ⓓ in Fig. 1 move smoothly.
2. Insert two pawls Ⓐ of the rear cover into two ribs ⓐ and lock the rear cover with two screws ③.

## 2 Cutter unit, rollers and sensor levers

a. Remove the rear cover and the handset holder ass'y according to procedure 1-a.

b. Remove the transport roller, the paper feed roller, the platen roller, and the sensor levers.

Parts list (Fig. 2)

| No. | Part name | Q'ty | No. | Part name | Q'ty |
|---|---|---|---|---|---|
| 1 | Lower cabinet | 1 | 15 | Bearing | 2 |
| 2 | Transport roller | 1 | 16 | Poly-slider | 1 |
| 3 | Transport roller gear | 1 | 17 | Platen | 1 |
| 4 | Paper feed roller | 1 | 18 | Screw | 1 |
| 5 | Paper feed roller gear | 1 | 19 | Earth wire | 1 |
| 6 | Speaker | 1 | 20 | Cutter guide upper | 1 |
| 7 | Original sensor lever | 1 | 21 | Cutter guide lower | 1 |
| 8 | Lever return spring | 1 | 22 | Screw | 1 |
| 9 | Front sensor | 1 | 23 | Cutter sensor cable | 1 |
| 10 | Lever return spring | 1 | 24 | Cutter sensor | 1 |
| 11 | Platen roller ass'y | 1 | 25 | Screw | 2 |
| 12 | Bearing | 1 | 26 | Earth wire | 1 |
| 13 | Stopper | 1 | 27 | Cutter unit | 1 |
| 14 | Platen gear | 1 | | | |

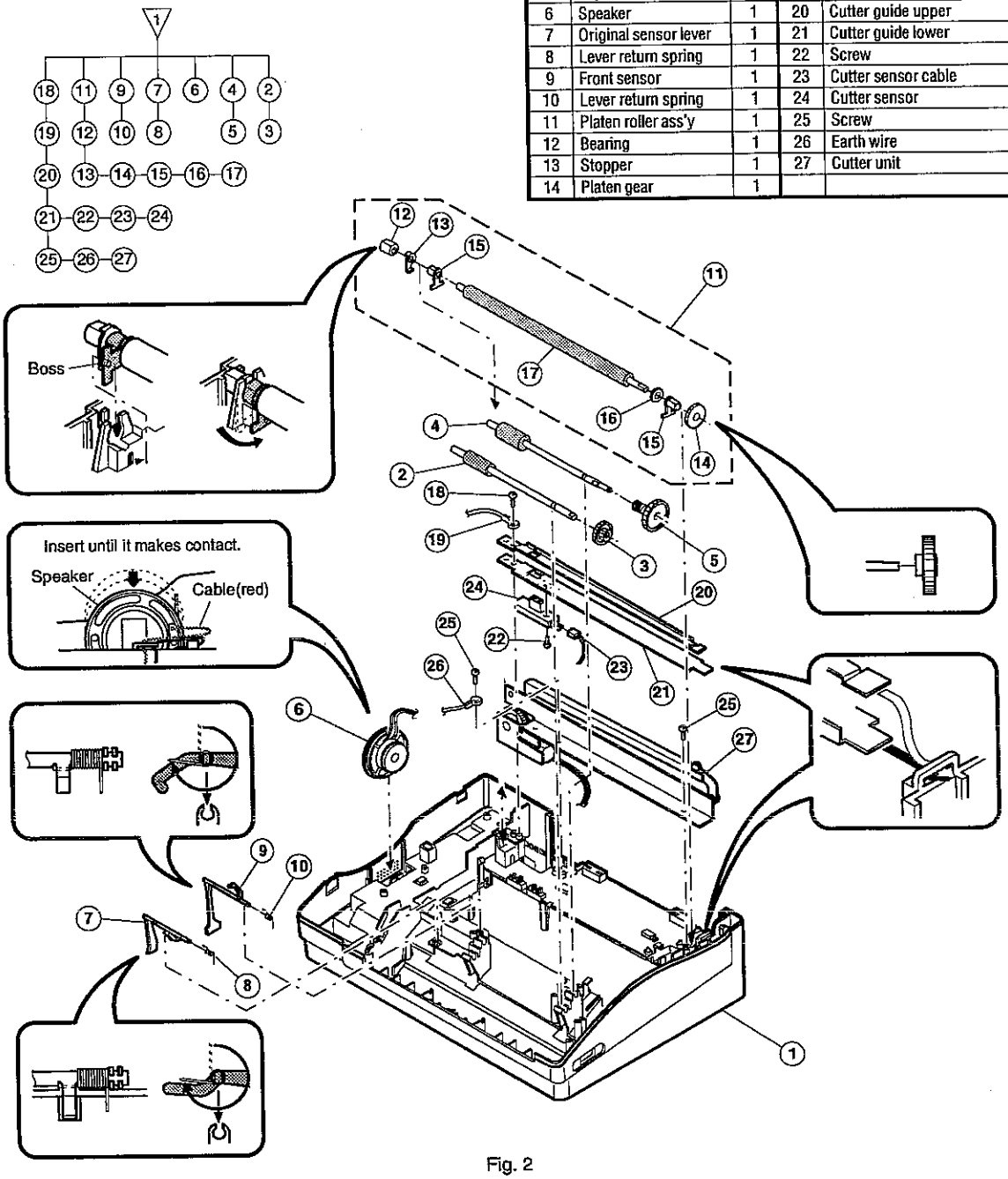



Fig. 2

### [Note for assembly]

1. When installing cutter unit ㉗ in Fig.2, be careful not to make contact between the cutter motor terminal and the lower cabinet.
2. For wiring of cutter unit ㉗, cutter sensor cable ㉔, and grounding cable ⑲, refer to "9. Wiring treatment. "
3. When assembling platen gear ⑭ to platen ⑰ in Fig. 2, be careful to the inserting direction. Refer to Fig. 2.
4. When attaching platen roller ass'y ⑪ in fig. 2 to the lower cabinet, note the following.
   - Put bearing ⑫ with the flat surface facing upwards. After setting, check that the flat surface faces upwards.
   - Rotate two bearings ⑮, insert the boss into the hole, and lock two bearings ⑮.
5. When assembling sensor levers ⑦ and ⑨ in Fig. 2, position lever return springs ⑧ and ⑩ as shown in the enlarged view.
6. Insert speaker ⑥ in Fig. 2 fully to the end with the red cable in the right side. (Refer to the enlarged view of Fig. 2.) For wire treatment of the speaker cable, refer to the wire treatment in Section 9.

## 3 LIU PWB, control PWB, power PWB

a. Remove the rear cover and the handset holder ass'y from the mechanism unit according to procedure 1-a.

b. Disconnect the connectors and the grounding cable from the bottom plate ass'y (with PWBs).

c. Remove the LIU PWB, the control PWB, and the power PWB according to the flowchart.

<Note 1> When disassembling bottom plate ass'y (4), be careful not to damage the three knobs (A) of the switch and the volume.

Parts list (Fig. 3)

| No. | Part name | Q'ty |
|---|---|---|
| 1 | Lower cabinet | 1 |
| 2 | Screw (3×8, with SW) | 1 |
| 3 | Screw (3×8) | 8 |
| 4 | Bottom plate ass'y (with PWBs) | 1 |
| 5 | Screw (4×6 with SW) | 1 |
| 6 | AC cord ass'y | 1 |
| 7 | Screw (3×5) | 4 |
| 8 | Screw (3×6 with SW) | 1 |
| 9 | Power unit | 1 |
| 10 | Control PWB | 1 |
| 11 | LIU PWB | 1 |
| 12 | Insulation sheet | 1 |
| 13 | Bottom plate | 1 |

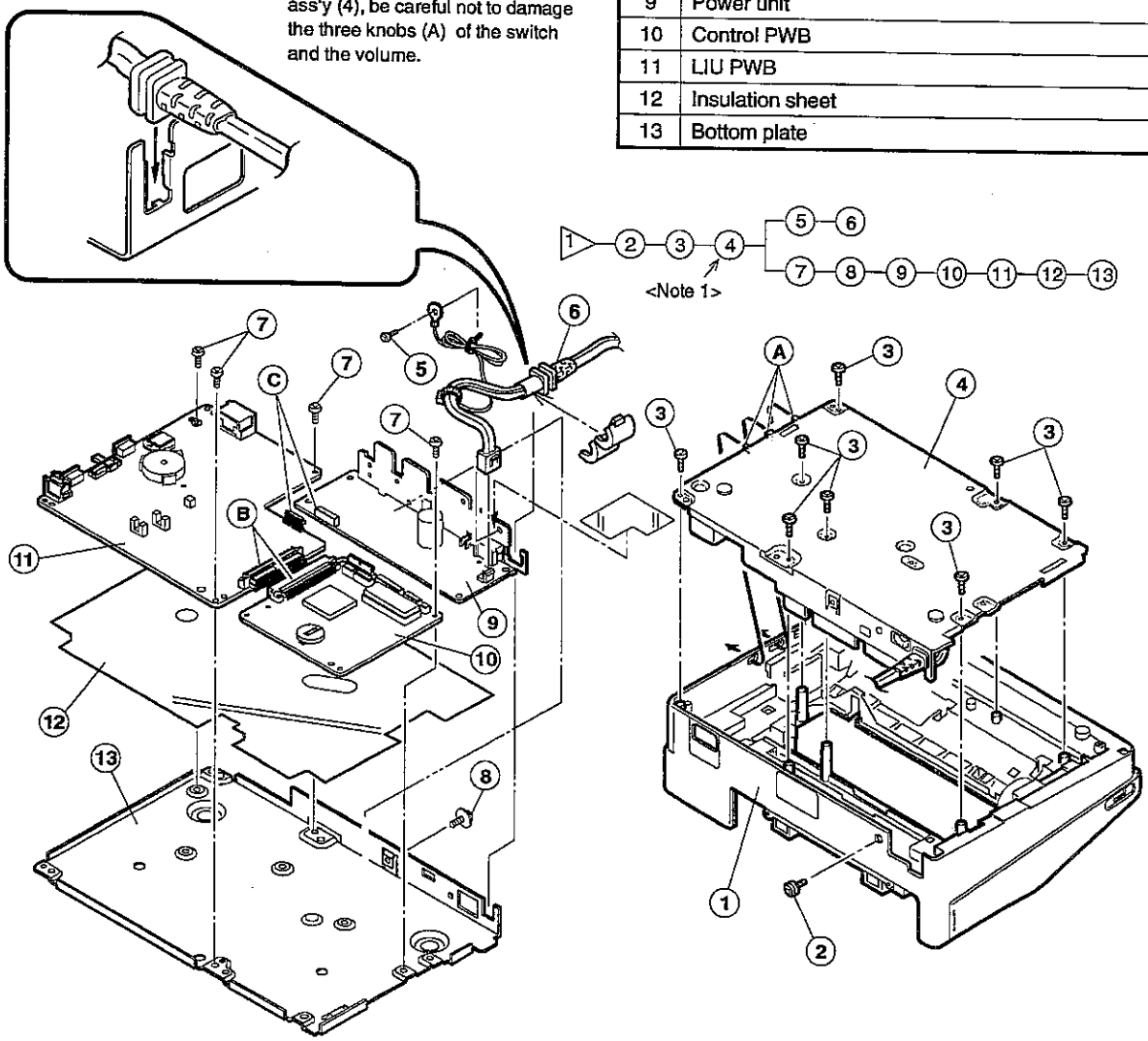
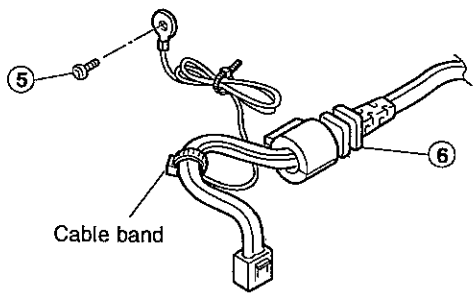



Fig. 3

### [Note for assembly]

1. When connecting LIU PWB ⑪ and control PWB ⑩ in Fig. 3, insert connector Ⓑ securely.
2. When connecting LIU PWB ⑪ and power PWB ⑨ in Fig. 3, insert connector Ⓒ securely.
3. When assembling AC cord ass'y ⑥ to bottom plate ⑬ in Fig. 3, be careful the inserting direction. (Refer to the enlarged view of Fig. 3.)
4. When assembling bottom plate ass'y ④ (with PWBs) in Fig. 3, insert three knobs Ⓐ of the switch and the volume into the square hole in the cabinet. Be careful not to pinch the cable.
5. When attaching the cord to AC cord ass'y ⑥ in Fig. 3, refer to the figure below for the attachment position.



## 4 Optical system unit

<Note> Never remove the CCD PWB, the lens, and the lens holding spring except when replacing or adjusting the optical system. If they are removed, adjustments of the optical system is required.

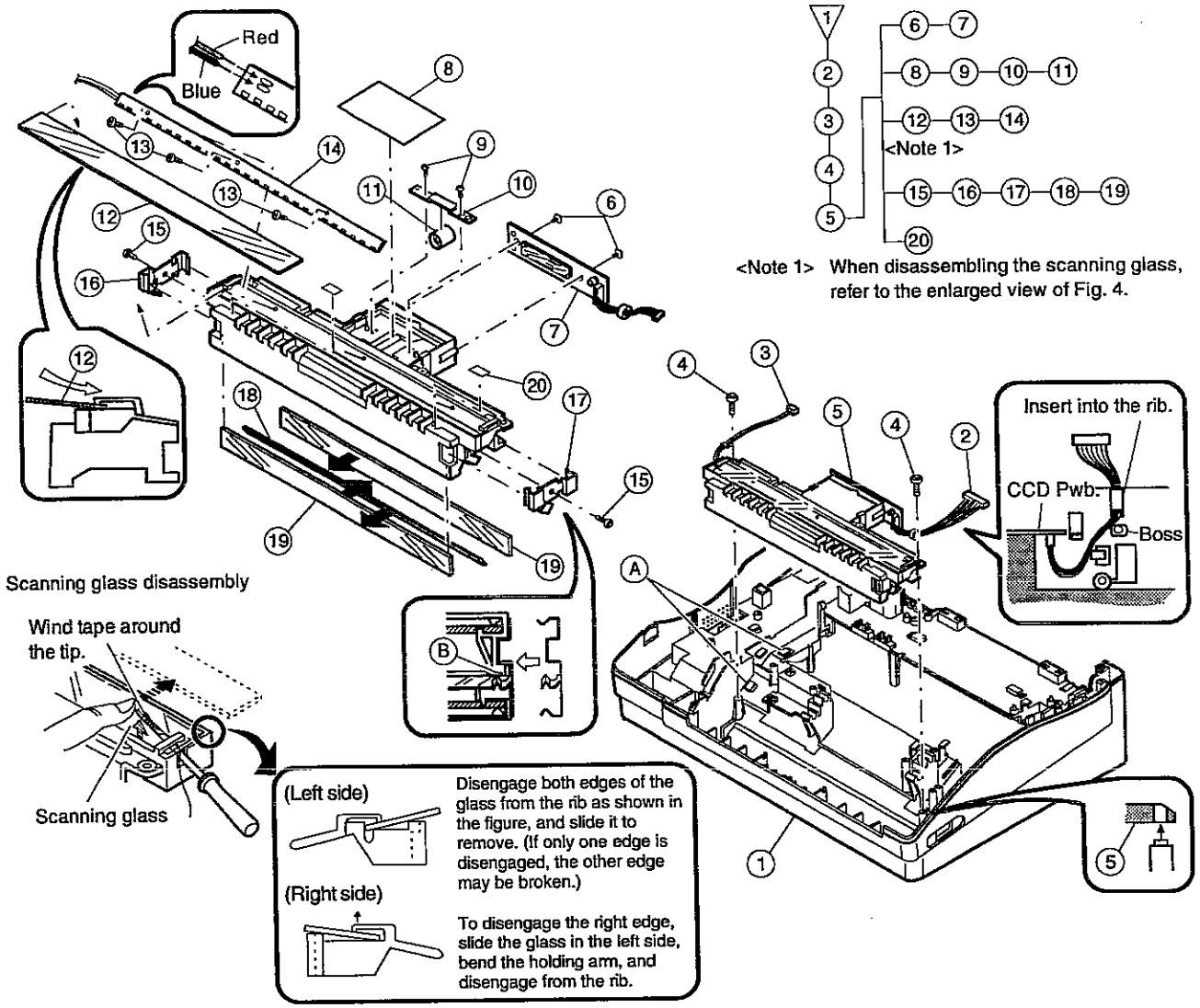
a. Remove the rear cover and the handset holder ass'y from the mechanism unit according to procedure 1-a.

b. Remove the optical system unit from the lower cabinet.

c. Disassemble the optical system unit.

Parts list (Fig. 4)

| No. | Part name | Q'ty | No. | Part name | Q'ty |
|---|---|---|---|---|---|
| 1 | Lower cabinet | 1 | 11 | Lens | 1 |
| 2 | Connector (CCD) | 1 | 12 | Scanning glass | 1 |
| 3 | Connector (LED) | 1 | 13 | Screw (2×6) | 3 |
| 4 | Screw (black) | 2 | 14 | LED | 1 |
| 5 | Optical system unit | 1 | 15 | Screw (3×4) | 2 |
| 6 | Screw (M3 red) | 2 | 16 | Mirror holding spring (left) | 1 |
| 7 | CCD PWB | 1 | 17 | Mirror holding spring (right) | 1 |
| 8 | Light shielding sheet | 1 | 18 | Mirror (1) | 1 |
| 9 | Screw (3×6) | 2 | 19 | Mirror (2) | 2 |
| 10 | Lens holding spring | 1 | 20 | Sheet | 2 |


Red
Blue
<Note 1>
Insert into the rib.
CCD Pwb.
Boss
Scanning glass disassembly
Wind tape around the tip.
Scanning glass
(Left side)
Disengage both edges of the glass from the rib as shown in the figure, and slide it to remove. (If only one edge is disengaged, the other edge may be broken.)
(Right side)
To disengage the right edge, slide the glass in the left side, bend the holding arm, and disengage from the rib.

<Note 1> When disassembling the scanning glass, refer to the enlarged view of Fig. 4.

Fig. 4

**[Note for assembly]**

1. When assembling mirrors ⑱ and ⑲ in Fig. 4, note the following items.
   - Check that the mirrors are free from dust, finger prints, and dirt. The mirror surface (vaporized surface) should faced in the arrow direction in Fig. 4.
   - Insert the mirror spring securely.
2. Insert mirror holding springs ⑰ and ⑯ securely, and apply screw lock to positions Ⓑ (each two positions in the right and the left).
3. When assembling scanning glass ⑫ in Fig. 4, note the following items:
   - Check that the scanning glass is free from dust, finger prints, and dirt. The inside cannot be cleaned after assembling. Be careful not to smear it when assembling.
   - When assembling, be careful not to apply an excessive force in the arrow direction.
4. Wire treatment
   - Pass the LED cable under two ribs Ⓐ.
   - Pass the CCD cable under rib. (Refer to the enlarged view.)

## 5 Upper cabinet ass'y

a. Remove the upper cabinet ass'y from the original guide upper ass'y.

b. Disassemble the upper cabinet ass'y.

Parts list (Fig. 5)

| No. | Part name | Q'ty | No. | Part name | Q'ty |
|---|---|---|---|---|---|
| 1 | Original guide upper ass'y | 1 | 11 | Stop key | 1 |
| 2 | Screw (3×8 black) | 3 | 12 | Start key | 1 |
| 3 | Connector (Panel) | 1 | 13 | Direct key | 1 |
| 4 | Upper cabinet ass'y | 1 | 14 | Rubber Key | 1 |
| 5 | Screw (2.6×6) | 4 | 15 | 12 key | 1 |
| 6 | Original guide upper panel | 1 | 16 | Screw | 1 |
| 7 | Screw (2×6) | 16 | 17 | Pinion | 1 |
| 8 | PWB protection sheet | 1 | 18 | Hopper sprig | 1 |
| 9 | Panel PWB | 1 | 19 | Hopper guide L | 1 |
| 10 | Mode key | 1 | 20 | Hopper guide R | 1 |
| | | | 21 | Decoration panel | 1 |

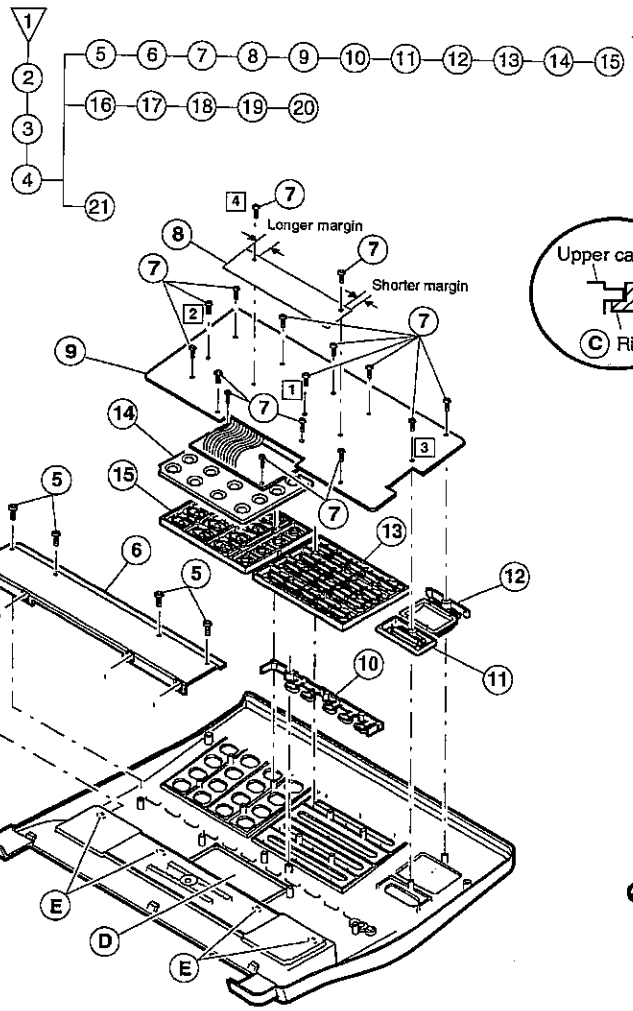



Fig. 5

### [Note for assembly]

1. When replacing the decoration panel ㉑ in Fig. 5, note the following items.
   - Remove oil from the attachment surface on the upper cabinet with alcohol.
   - Check that the display window is free from dirt and scratchs.
   - Attach properly to the attachment region on the upper cabinet.
2. When assembling hopper guide L and R ⑲ and ⑳, note the following items.
   - Put two ribs Ⓒ of each of hopper guides ⑲ and ⑳ under the upper cabinet. (Refer to the enlarged view.)
   - When inserting pinion ⑰, move the hopper guides ⑲ and ⑳ to the inside, insert pinion ⑰ and fix it with screw ⑯.

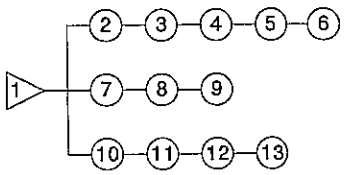
   <Check>
   - Check that the right and left hoppers are in positions and are opened and closed smoothly.
   - Move hopper guide R ⑳ at the rate of about 10mm/sec in the direction of arrows Ⓐ and Ⓑ by using a tension gauge to check that the load is in the range of 500g to 150g.
3. When assembling panel PWB ⑨ in Fig. 5, note the following items.
   - Check that the LCD display (glass surface) and section Ⓓ (inside of the decoration panel display window) in Fig. 5 are free from dust and dirt.
   - When assembling PWB protection sheet ⑧ in Fig. 5, place the longer margin in the right side.
   - When fixing 16 screws ⑦, first fix four screws in the sequence of [1] to [4] shown in the figure, then fix the twelve remaining screws.
4. Insert original guide upper panel ⑥ into four ribs Ⓔ in Fig. 5 and fix it with screws.
5. When assembling upper cabinet ass'y ④ in Fig. 5, insert three ribs Ⓕ under the original guide upper ass'y.

## 6 Original guide upper ass'y

a. Remove the upper cabinet ass'y from the original guide upper ass'y according to procedure 5-a.

b. Remove the release lever, the transport roller, and the pinch roller.

<Note> When replacing the head unit and the rear sheet, refer to section 7.




Parts list (Fig. 6)

| No. | Part name | Q'ty |
|---|---|---|
| 1 | Original guide upper | 1 |
| 2 | Release lever | 1 |
| 3 | Release lever spring | 1 |
| 4 | Bearing | 2 |
| 5 | Transport roller | 1 |
| 6 | Transport gear | 2 |
| 7 | Screw (2×4) | 1 |
| 8 | Separation pressure spring | 1 |
| 9 | Separation rubber | 1 |
| 10 | Screw (3×6) | 2 |
| 11 | Pinch pressure spring | 2 |
| 12 | Pinch roller shaft | 1 |
| 13 | Pinch roller | 1 |

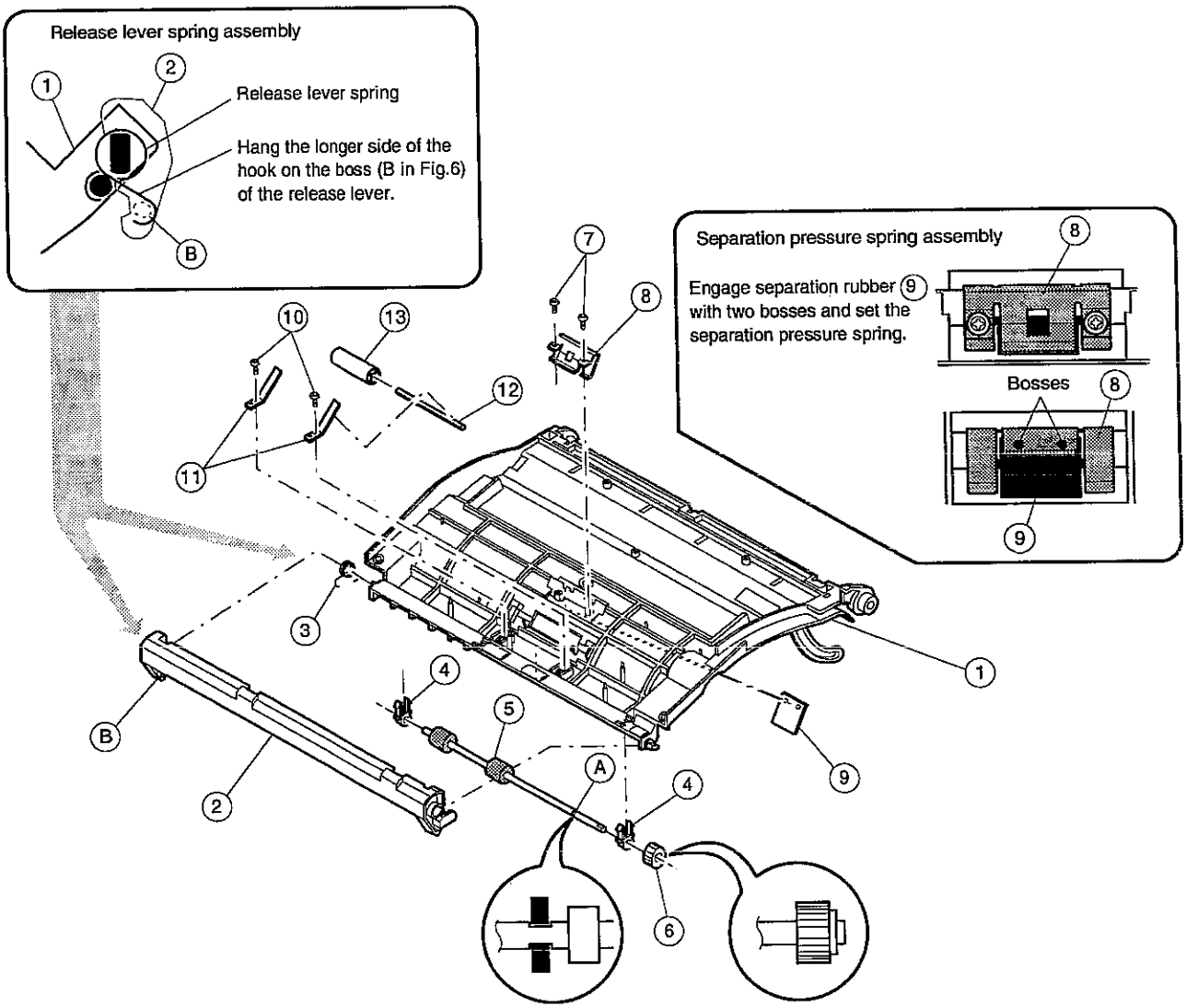

Release lever spring assembly
Release lever spring
Hang the longer side of the hook on the boss (B in Fig.6) of the release lever.
Separation pressure spring assembly
Engage separation rubber ⑨ with two bosses and set the separation pressure spring.
Bosses

Fig. 6

**[Note for assembly]**

1. Insert two pinch pressure springs ⑪ in Fig. 5 into the positioning boss and fix with screw.
2. When assembling separation rubber ⑨ and separation pressure spring ⑧, refer to the enlarged view of Fig. 6.
3. When assembling transport gear ⑥ to the shaft of transport roller ⑤, put the extended portion of transport gear ⑥ outside.
4. When assembling transport roller ⑤ in Fig. 6 to the original guide upper, engage the dented section Ⓐ of the roller with the rib of the original guide upper. (Refer to the enlarged view.)
5. Lock the pawls of two bearings ④ in Fig. 6 securely.
6. When assembling release lever ② in Fig. 6, attach release lever spring ③ as shown in the enlarged view.

## 7 Head unit, etc.

a. Remove the rear cover and the handset holder ass'y from the mechanism unit according to procedure 1-a.

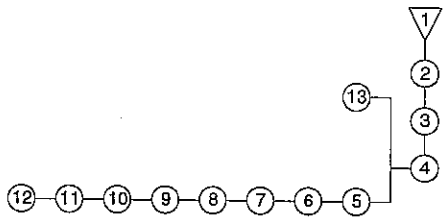
b. Disconnect the connectors and grounding wire from the upper cabinet ass'y.

c. Remove the upper cabinet ass'y.

d. Remove the head unit.

Parts list (Fig. 7)

| No. | Part name | Q'ty |
|---|---|---|
| 1 | Lower cabinet | 1 |
| 2 | Open/close spring R | 1 |
| 3 | Open/close spring L | 1 |
| 4 | Upper cabinet ass'y | 1 |
| 5 | Screw (3×6) | 1 |
| 6 | Grounding cable | 1 |
| 7 | Head cover ass'y | 1 |
| 8 | Connector | 1 |
| 9 | Head unit | 1 |
| 10 | Screw (3×6) | 2 |
| 11 | Grounding cable | 1 |
| 12 | Head pressure spring | 2 |
| 13 | Rear sheet | 1 |



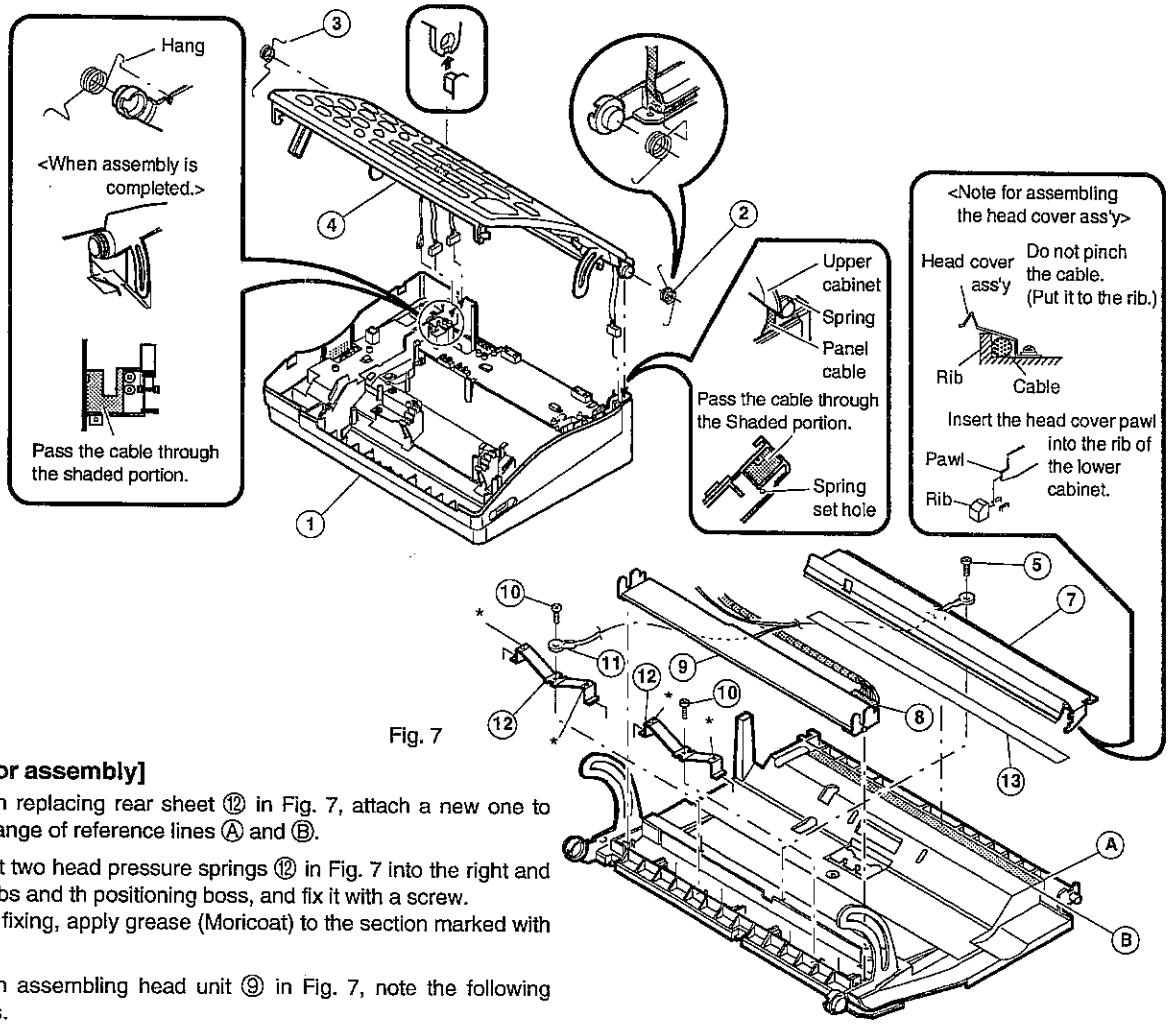




Fig. 7

### [Note for assembly]

1. When replacing rear sheet ⑫ in Fig. 7, attach a new one to the range of reference lines Ⓐ and Ⓑ.
2. Insert two head pressure springs ⑫ in Fig. 7 into the right and left ribs and th positioning boss, and fix it with a screw. After fixing, apply grease (Moricoat) to the section marked with (*).
3. When assembling head unit ⑨ in Fig. 7, note the following items.
   - Connect the connector of the head cable securely.
   - Insert the right and left bosses Ⓒ of the head unit under the lower cabinet.
4. For wiring treatment of the head cable and the grounding cable, refer to the Fig. 8.

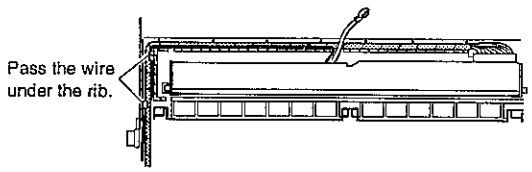



Fig. 8

5. When assembling head cover ass'y ⑦ in Fig. 7, refer to the enlarged view.
6. When assembling upper cabinet ass'y ④ in Fig. 7 to the lower cabinet, refer to the enlarged view for hanging the open/close spring.

## 8 Drive system unit

a. Remove the rear cover and the handset holder ass'y from the mechanism unit according to procedure 1-a.

b. Remove the platen roller from the lower cabinet.

c. Remove the drive system unit from the flower cabinet.

d. Disassemble the drive system unit.

**[Note for disassembly]**

When planetary gear ass'y ⑪ is removed, gear ⑰ may be set free and disassembled. Be careful not to lose it.

Parts list (Fig. 9)

| No. | Part name | Q'ty | No. | Part name | Q'ty |
|---|---|---|---|---|---|
| 1 | Lower cabinet | 1 | 15 | Planetary gear mounting plate (2) | 1 |
| 2 | Connector (Solenoid) | 1 | | | |
| 3 | Connector (Motor) | 1 | 16 | Planetary gear mounting plate (1) | 1 |
| 4 | Screw (3×10) | 2 | | | |
| 5 | Drive system unit | 1 | 17 | Planetary gear | 1 |
| 6 | Lock pawl return spring | 1 | 18 | Idler gear (2) | 2 |
| 7 | Lock pawl | 1 | 19 | Reduction gear (1) | 1 |
| 8 | Lock pawl return spring | 1 | 20 | Idler gear (5) | 1 |
| 9 | Lock pawl (2) | 1 | 21 | Idler gear (4) | 1 |
| 10 | Washer (motor gear) | 1 | 22 | Idler gear (6) | 1 |
| 11 | Planetary gear ass'y | 1 | 23 | Reduction gear (2) | 1 |
| 12 | Washer (Planetary gear) | 2 | 24 | Screw (3×8) | 2 |
| 13 | Planetary gear | 2 | 25 | Drive motor | 1 |
| 14 | Pressure spring | 2 | 26 | Heat radiating plate | 1 |
| | | | 27 | Solenoid | 1 |

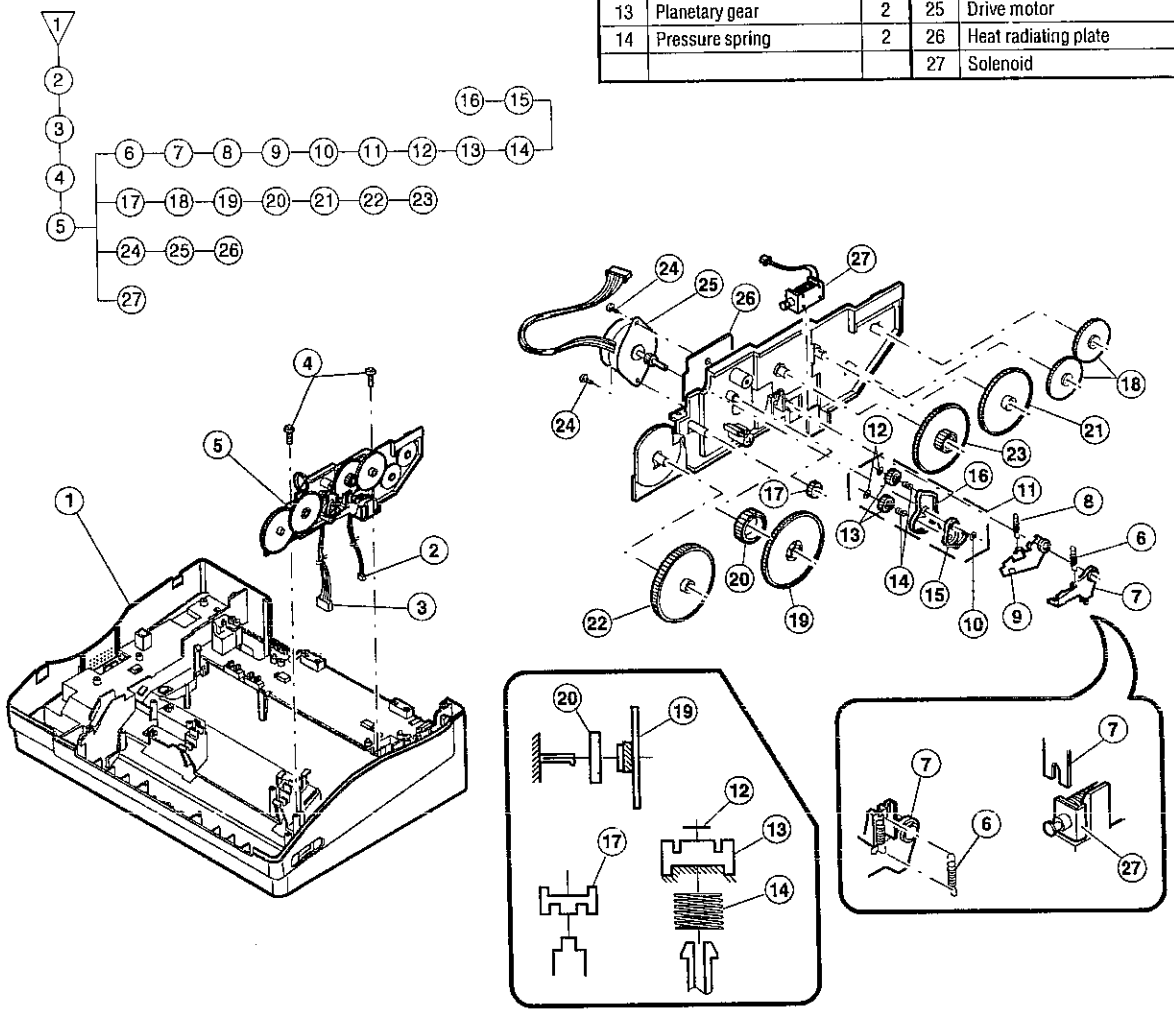


Fig. 9

**[Note for assembly]**

1. When assembling drive motor ㉕ in Fig. 9, be careful not to put it upside down. Place the cable port in the upper side. (Refer to Fig. 9.)
2. Note and check the following items when assembling the gears.
   - For insertion direction of the gear, refer to the enlarged view of Fig. 9.
   - Apply grease (Moricoat) to the shaded portion of gears ⑬ and ⑲. (Refer to the enlarged view.)
   - Engage gears ⑱, ⑲, ㉑, and ⑳ securely with the shaft pawl.

   <Check> Check that the planetary gear and the lock pawl operate smoothly without disengagement of the pawl section after assembly.
3. Insert lock pawl ⑦ in Fig. 9 into the dented portion of the solenoid shaft. (Refer to the enlarged view.)
4. For inserting direction of lock pawl return spring ⑥ in Fig. 9, refer to the enlarged view.
5. Engage drive system unit ⑤ in Fig. 9 with two positioning bosses and fix with a screw.

## 9 Wire treatment

a. Perform wire treatment carefully and deliberately.

b. For wire treatment procedures which are not described in this section, refer to the section for that portion of the unit.

**[Tips for wire treatment]**

1. Set cores ① and ② to the position shown in Fig. 10 without allowing them to make contact with the handset holder cabinet.
2. Keep the wire away from the surrounding area of front sensor lever ③ .
3. Pass the speaker cable, the LED cable, and the CCD cable under ribs Ⓐ, Ⓑ, and Ⓒ.

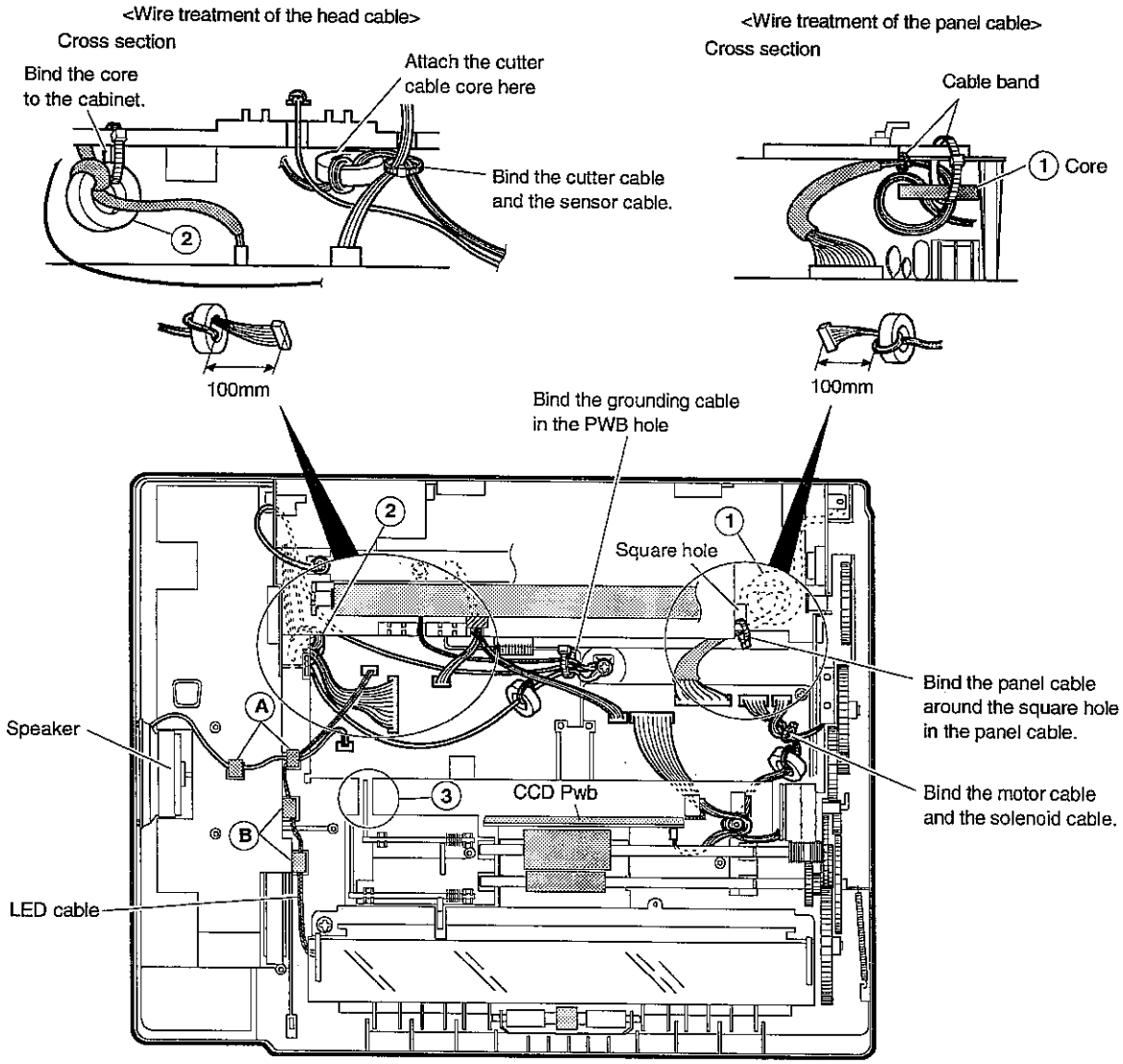
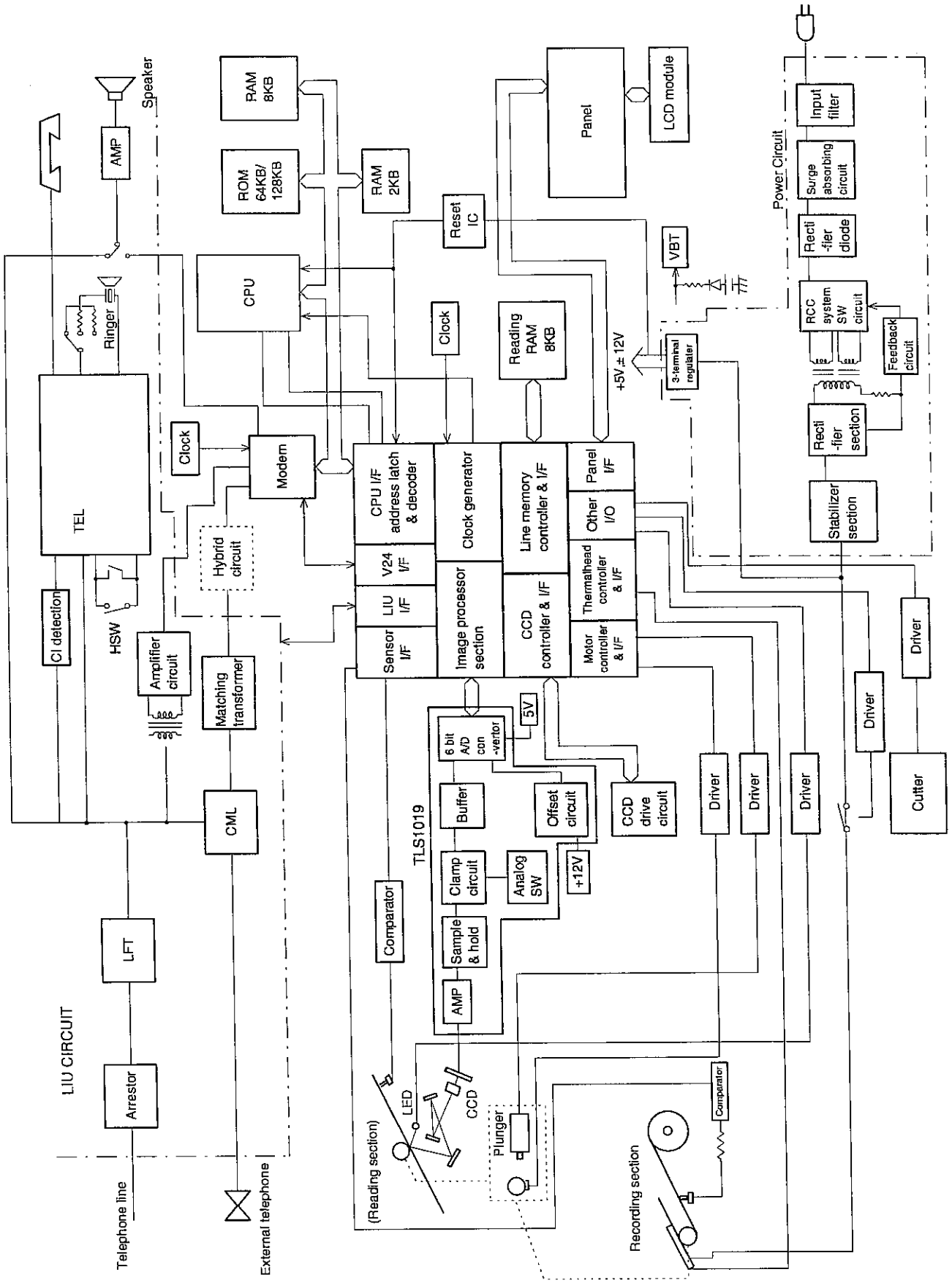


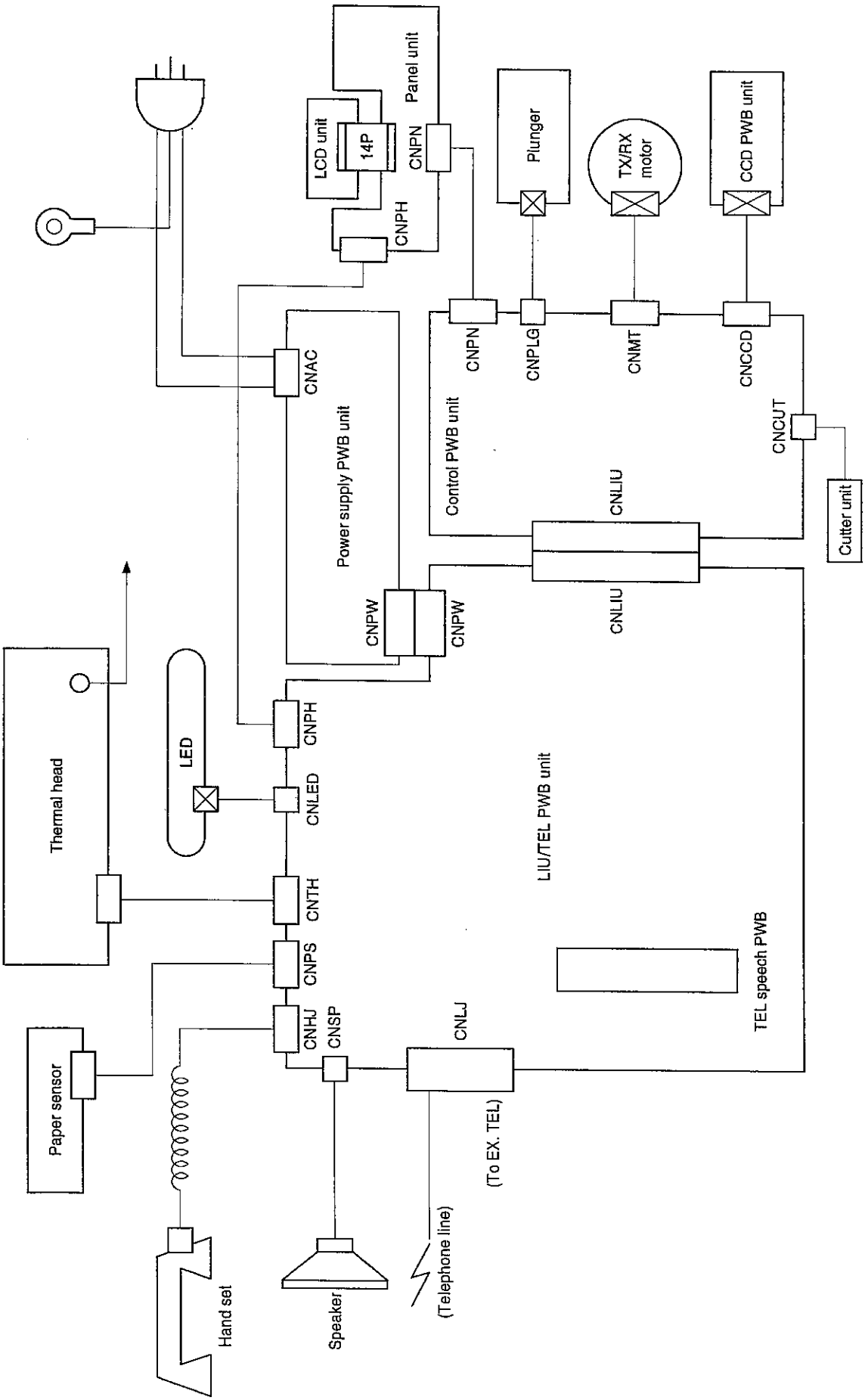

Fig. 10

# CHAPTER 4. DIAGRAMS

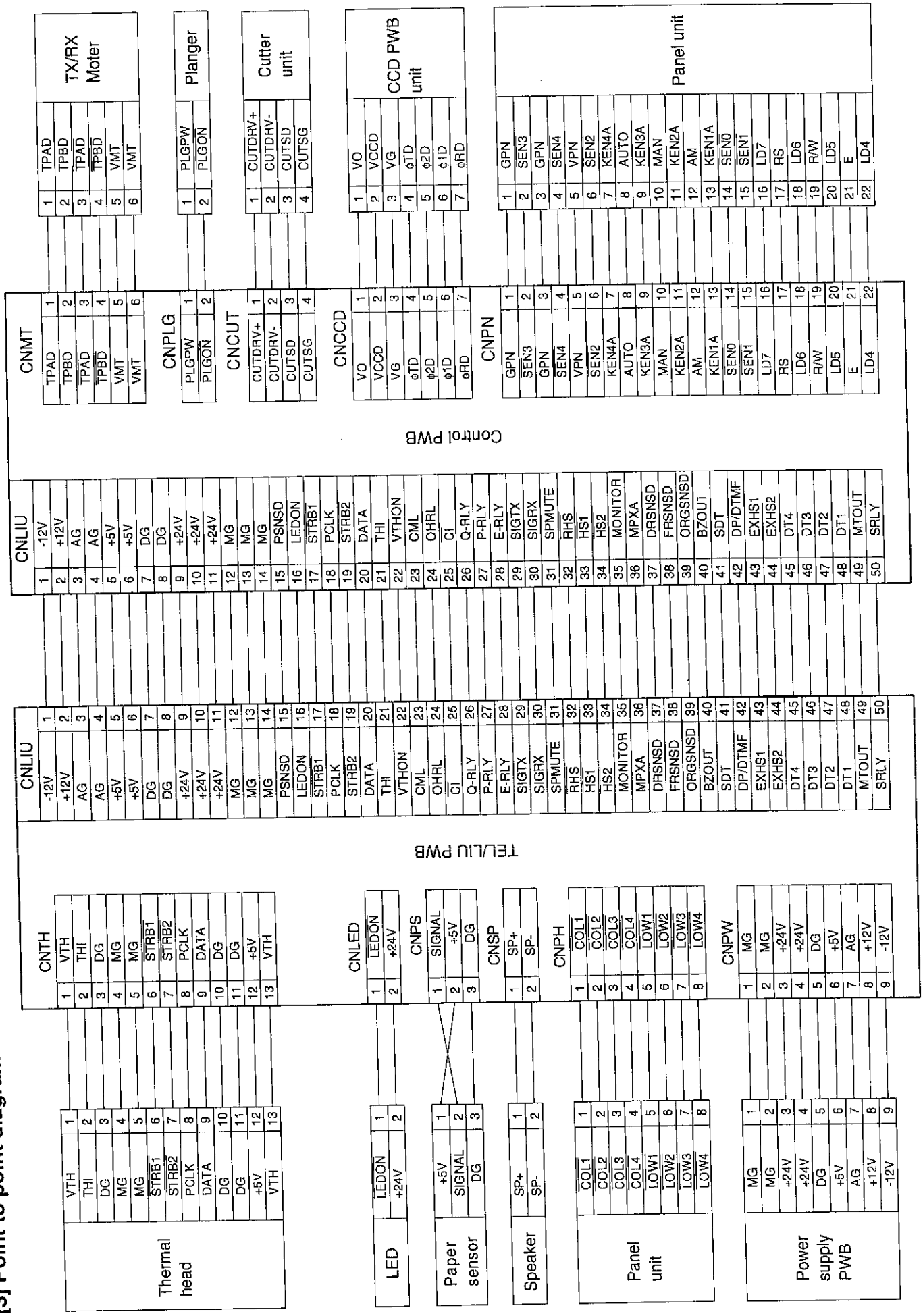
## [1] Block diagram



## [2] Wiring diagram



## [3] Point to point diagram



## [4] Connector for Signal name

| CNLIU | | | |
|---|---|---|---|
| -12V | 1 | 2 | +12V |
| AG | 3 | 4 | AG |
| +5V | 5 | 6 | +5V |
| DG | 7 | 8 | DG |
| +24V | 9 | 10 | +24V |
| +24V | 11 | 12 | MG |
| MG | 13 | 14 | MG |
| PSNSD | 15 | 16 | LEDON |
| $\overline{\text{STRB1}}$ | 17 | 18 | PCLK |
| $\overline{\text{STRB2}}$ | 19 | 20 | DATA |
| THI | 21 | 22 | VTHON |
| CML | 23 | 24 | OHRL |
| CI | 25 | 26 | MPXA |
| MPXB | 27 | 28 | MPXC |
| SIGTX | 29 | 30 | SIGRX |
| SPMUTE | 31 | 32 | RHS |
| $\overline{\text{HS1}}$ | 33 | 34 | P/T |
| DPON | 35 | 36 | TLMUTE |
| DRSNSD | 37 | 38 | FRSNSD |
| ORGSNSD | 39 | 40 | BZOUT |
| SDT | 41 | 42 | DP/DTMF |
| EXHS1 | 43 | 44 | EXHS2 |
| DT4 | 45 | 46 | DT3 |
| DT2 | 47 | 48 | DT1 |
| MTOUT | 49 | 50 | SRLY |

| CNPN | | | |
|---|---|---|---|
| GPN | 1 | 2 | $\overline{\text{SEN3}}$ |
| GPN | 3 | 4 | $\overline{\text{SEN4}}$ |
| VPN | 5 | 6 | $\overline{\text{SEN2}}$ |
| KEN4A | 7 | 8 | AUTO |
| KEN3A | 9 | 10 | MAN |
| KEN2A | 11 | 12 | AM |
| KEN1A | 13 | 14 | $\overline{\text{SEN0}}$ |
| $\overline{\text{SEN1}}$ | 15 | 16 | LD7 |
| RS | 17 | 18 | LD6 |
| R/W | 19 | 20 | LD5 |
| E | 21 | 22 | LD4 |

| CNPW | |
|---|---|
| 1 | MG |
| 2 | MG |
| 3 | +24V |
| 4 | +24V |
| 5 | DG |
| 6 | +5V |
| 7 | AG |
| 8 | +12V |
| 9 | -12V |

| CNTH | |
|---|---|
| 1 | VTH |
| 2 | THI |
| 3 | DG |
| 4 | MG |
| 5 | MG |
| 6 | $\overline{\text{STRB1}}$ |
| 7 | $\overline{\text{STRB2}}$ |
| 8 | PCLK |
| 9 | DATA |
| 10 | DG |
| 11 | DG |
| 12 | +5V |
| 13 | VTH |

| CNPLG | |
|---|---|
| 1 | PLGPW |
| 2 | $\overline{\text{PLGON}}$ |

| CNLED | |
|---|---|
| 1 | $\overline{\text{LEDON}}$ |
| 2 | +24V |

Not mounted

| CNBT | |
|---|---|
| 1 | BT+ |
| 2 | BT- |

| CNSP | |
|---|---|
| 1 | SP+ |
| 2 | SP- |

| CNPH | |
|---|---|
| 1 | $\overline{\text{COL1}}$ |
| 2 | $\overline{\text{COL2}}$ |
| 3 | $\overline{\text{COL3}}$ |
| 4 | $\overline{\text{COL4}}$ |
| 5 | $\overline{\text{ROW1}}$ |
| 6 | $\overline{\text{ROW2}}$ |
| 7 | $\overline{\text{ROW3}}$ |
| 8 | $\overline{\text{ROW4}}$ |

| CNCCD | |
|---|---|
| 1 | VO |
| 2 | VCCD |
| 3 | VG |
| 4 | $\phi$TD |
| 5 | $\phi$2D |
| 6 | $\phi$1D |
| 7 | $\phi$RD |

| CNMT | |
|---|---|
| 1 | TPAD |
| 2 | TPBD |
| 3 | $\overline{\text{TPAD}}$ |
| 4 | $\overline{\text{TPBD}}$ |
| 5 | VMT |
| 6 | VMT |

| CNPS | |
|---|---|
| 1 | SIGNAL |
| 2 | +5V |
| 3 | DG |

| CNCUT | |
|---|---|
| 1 | CUTDRV+ |
| 2 | CUTDRV- |
| 3 | CUTSD |
| 4 | CUTSG |

# CHAPTER 5. CIRCUIT DESCRIPTION

## [1] Circuit description

### 1. General description

The compact design of the control PWB is obtained by using gate arrays in the main control section and high density printing of surface mounting parts. Each PWB is independent according to its function as shown in Fig. 1.

### 2. PWB configuration

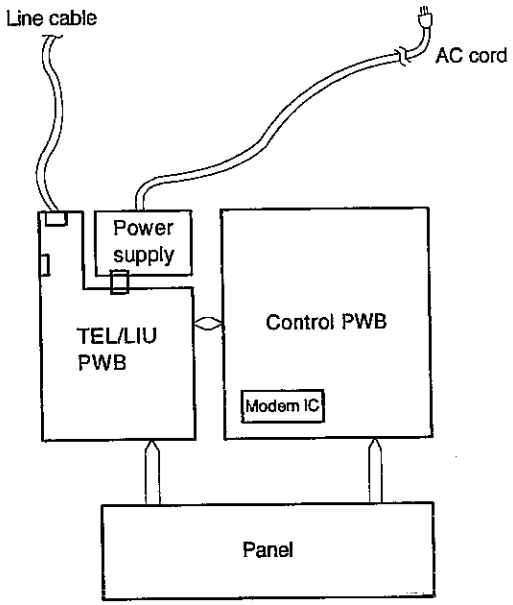



Fig. 1 PWB configuration

#### 1) Control PWB

The control PWB controls peripheral PWB's, mechanical parts, transmission, and performs overall control of the unit.
This machine employs an 1-chip modem (R96DFXL) which is installed on the control PWB.

#### 2) TEL/LIU

This PWB controls connection of the telephone line to the unit.

#### 3) Power supply

This provides voltages of +5V, ±12V, and +24V to the control PWB and the thermalhead.

#### 4) Panel

The panel allows input of the operation panel and LCD display.

### 3. Operational description

Operational descriptions are given below:

- Transmission
  When a document in loaded in the standby mode, the state of the document sensor is sensed via the main controller gate array. If the sensor signal was on, the motor is started to bring the document into the standby position. With depression of the START key in the off-hook state, transmission takes place.
  Upon depression of the START key, the CML relay is set active which switches the line from the telephone to the modem. Then, the procedure is sent out from the modem and the motor is rotated to move the document down to the scan line. In the scan processor, the signal scanned by CCD is sent to the internal image processor and the AD converter to convert the analog signal into binary data. This binary data is transferred from the scan processor to the image buffer within the RAM and encoded and stored in the transmit buffer of the RAM. The data is then converted from parallel to serial form by the modem interface of the main control gate array to be sent to the modem where the serial data is modulated and sent onto the line.
- Receive operation
  There are two ways of starting reception, manual and automatic. Depression of the START key in the off-hook mode in the case of the manual receive mode, or CI signal detection by the LIU in the automatic receive mode, causes the CML relay to activate to initiate the receive operation.
  First, the CPU controls the procedure signals from the modem to be ready to receive data. When the program goes into phase C, the serial data from the modem is converted to parallel form in the modem interface of the main control gate array which is stored in the receive buffer of the RAM. The data in the receive buffer is decoded software-wise to reproduce it as binary image data in the image buffer. The data is DMA transferred to the recording processor within the main control gate array which is then converted from parallel to serial form to be sent to the thermalhead. The data is printed line by line by the CPU which is assigned to control the motor rotation and strobe signal.
- Copy operation
  To make a copy on this facsimile, the START key is pressed when the machine is ready with a document on the document table and the telephone set is in the on-hook state.
  First, depression of the START key advances the document to the scan line. Similar to the transmitting operation, the image signal from the CCD is converted to a binary signal in the DMA mode via the main control gate array which is then sent to the image buffer of the RAM. Next, the data is transferred to the recording processor in the DMA mode to send the image data to the thermalhead which is printed line by line. The copying takes place as the operation is repeated.

# [2] Description of control PWB

## 1. General description

Fig. 2 shows the functional blocks of the control PWB, which is composed of 5 blocks.

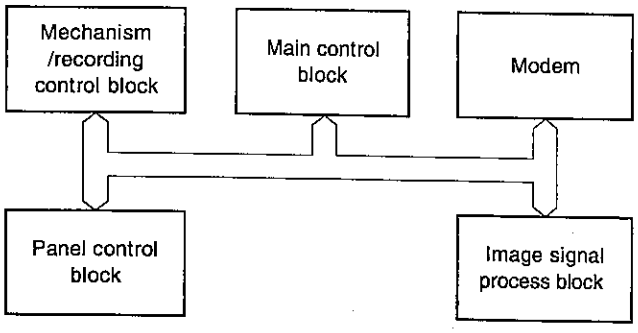



Fig. 2 Control PWB functional block diagram

## 2. Description of each block

### (1) Main control block

The main control block is composed of an 8-bit microprocessor HD64180, ROM (64KByte), and RAM (8KByte). Devices are connected to the bus to control the whole unit.

#### 1) HD64180 (IC2, main CPU) ... pin-80 QFP

This is a CMOS 8-bit microprocessor. A high-speed CPU (compatible with Z80 upper class models) and peripheral functions are incorporated in one chip.
This system allows the following functions.

- Memory Management Unit (MMU)
- DMA controller (2 channel); channel 0: For read, channel 1: For write.
- Timer
- Interruption; As external interrupt.
  $\overline{INT0}$: Modem interrupt
  $\overline{INT1}$: Not used
  $\overline{INT2}$: Mechanism control section/RTC detection interrupt.

Operating speed is 6MHz.
In addition, 12MHz clock is supplied from external clock input pin 76 as the basic clock of the Modem (IC1).
For reset when power is turned on, a LOW signal of about 50msec is supplied to $\overline{RESET}$ terminal.

#### 2) 27C010 (IC9, main ROM): pin-32 DIP

EPROM of 1Mbit equipped with software for the main CPU.

#### 3) LH5160 (IC4): pin-28, SOP

Line memory for the main CPU system RAM area and coding/decoding process. Used as the transmission buffer.
Memory of recorded data such as daily report and auto dials. When power is turned off, backup is made with a lithium battery.

#### 4) LZ9AH11 (IC5): pin-160, QFP

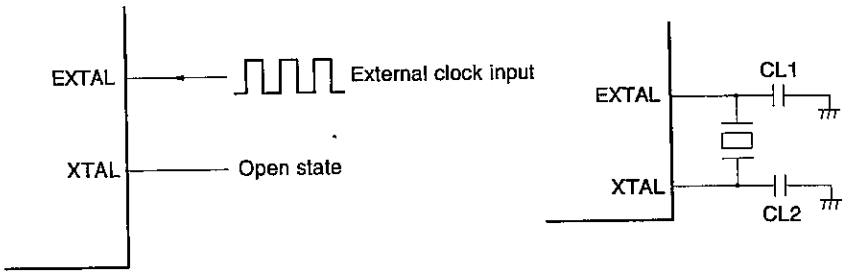
The following functions are incorporated to support the main CPU.

- Main CPU I/F and register
- I/O port
- Main CPU timer
- Read system control
- Memory mapping
- Mechanism/recording control block
- Modem I/F (RTC detection)
- Cutter control

#### 5) LH5116 (IC7): pin-24 SOP

Work area for main program.
This IC is not back-up

## HD64180 (IC2) terminal descriptions

| Classification | Code | Terminal No. (FP-80) | | Name and pin function |
|---|---|---|---|---|
| Power GND | VCC | 32 | Input | Power supply: Connected to the power source. (+5V) |
| | VSS | 12, 34, 72, 73 | Input | Ground: Connected to the power source. (Ground) |
| XTAL clock | XTAL | 74 | Input | Connected to a crystal oscillator. Frequency must be two times as great as $\phi$ clock frequency.<br>When inputting an external clock to EXTAL pin, open XTAL pin. |
| | EXTAL | 76 | Input | Connected to an crystal oscillator. Also used as an external clock input pin. The external clock input frequency must be two time as great as $\phi$ clock frequency. |
| |  Recommended circuit configuration with a crystal oscillator | | | |
| | $\phi$ | 71 | Output | System clock: Provides system clock to the peripheral devices. |
| Reset | $\overline{RESET}$ | 80 | Input | Reset: LOW when the LSI is reset state. |
| Address bus | $A_0$–$A_{18}$<br>$A_0$–$A_{19}$<br>(HD64180R1; FP-80, CP-68)<br>(A18 is commonly used with TOUT.) | 8–11<br>13<br>15–21<br>24–29<br>31, 33 | Output (Three-state) | Address bus: The address to make access to the memory space. HIGH only in the following cases:<br>(a) Reset<br>(b) Bus control is transmitted to another device. (When $\overline{BUSACK}$ = "0" by $\overline{BUSREQ}$ = "0")<br>A18 is multiplexed with TOUT. The timer control register TOC0 and TOC1 bits determine which output to take. |
| Data bus | D0–D7 | 35–41, 44 | Input/Output | Data Bus: 8-bit bidirectional data bus |
| Memory I/O interface signal | $\overline{RD}$ | 70 | Output (Three-state) | Read: Shows that the LSI is in read cycle. At that time, the data bus is in output mode. |
| | $\overline{WR}$ | 69 | Output (Three-state) | Write: Shows that the LSI is in write cycle. At that time, the data bus is in output mode. |
| | $\overline{ME}$ | 66 | Output (Three-state) | Memory Enable: Shows that read/write operation of the memory is being executed. LOW in the following cases:<br>(a) Command fetch, operant read<br>(b) Memory access in DMA cycle<br>(c) Refresh cycle |
| | $\overline{IOE}$ | 65 | Output (Three-state) | I/O Enable: Shows that I/O read/write operation is being executed. LOW in the following cases:<br>(a) Read/write of data in executing an I/O command<br>(b) I/O access in DMA cycle<br>(c) $\overline{INT_0}$ acknowledge cycle |
| | $\overline{WAIT}$ | 77 | Input | Wait: Used to extend read/write cycle of I/O or the memory. When this input is LOW at the falling edge of T2, TW state is inserted next to T2. When it is LOW at the falling edge of TW, another TW is inserted again next to the preceding one. |
| | E | 67 | Output | Enable: Synchronizing clock for peripheral LSI's of the 6800 system. |
| System control signal | $\overline{BUSREQ}$ | 79 | Input | Bus Request: Used for other devices to request bus free to this LSI. When driven LOW, the CPU stops execution of commands and drives some parts ($\overline{RD}$, $\overline{WR}$, $\overline{ME}$, $\overline{IOE}$) of the address bus, data bus, and memory interface signals HIGH. |
| | $\overline{BUSACK}$ | 78 | Output | Bus acknowledge: Shows that the CPU received $\overline{BUSREQ}$ signal and freed the bus.<br>When a device which outputted $\overline{BUSREQ}$ signal receives $\overline{BUSACK}$ signal, it acknowledges that it has gained bus control. |

<table>
<tr><th>Classification</th><th>Code</th><th>Terminal No.</th><th></th><th>Name and pin function</th></tr>
<tr><td>System control signal</td><td>$\overline{HALT}$</td><td>61</td><td>Output</td><td>HALT: LOW when the CPU executes HALT or SLP command, and shows to the outside that the CPU is in HALT mode, SLEEP mode, or SYSTEM STOP mode. Used with ST signal and $\overline{LIR}$ signal to show the operation status such as the internal DMA operation and the CPU operation mode.</td></tr>
<tr><td></td><td>$\overline{LIR}$</td><td>68</td><td>Output</td><td>Load Instruction Register: Shows that the cycle which is under operation is the operation code fetch cycle.</td></tr>
<tr><td></td><td>ST</td><td>7</td><td>Output</td><td>Status: Shows the operation status.<br>Do not connect with a pull-down resistor.<br><table><tr><th>ST</th><th>$\overline{HALT}$</th><th>$\overline{LIR}$</th><th>Operation status</th></tr><tr><td>0</td><td>1</td><td>0</td><td>CPU operation (First operation code fetch cycle)</td></tr><tr><td>1</td><td>1</td><td>0</td><td>CPU operation (Second, third operation code fetch cycles)</td></tr><tr><td>1</td><td>1</td><td>1</td><td>CPU operation (Machine cycle other than operation code fetch cycle)</td></tr><tr><td>1</td><td>Not fixed.</td><td>0</td><td>DMA operation</td></tr><tr><td>0</td><td>0</td><td>0</td><td>HALT mode</td></tr><tr><td>1</td><td>0</td><td>1</td><td>SLEEP mode SYSTEM STOP mode</td></tr></table></td></tr>
<tr><td>System control signal</td><td>$\overline{REF}$</td><td>64</td><td>Output</td><td>Refresh: When LOW, shows that the CPU is in DRAM refresh cycle. When LOW, refresh addresses are outputted to the lower 8 bits of the address bus ($A_0$–$A_7$). Refresh interval is programmable in 10, 20, 40 or 80 state.</td></tr>
<tr><td>Interrupt signal</td><td>$\overline{NMI}$</td><td>1</td><td>Input</td><td>Non-Maskable Interrupt: This is the non-maskable intterrupt request terminal.</td></tr>
<tr><td></td><td>$\overline{INT_0}$</td><td>4</td><td>Input</td><td>Interrupt 0: Maskable interrupt level 0 request terminal. In level 0, there are three operation mode:<br><table><tr><th>Operation mode</th><th>Content</th></tr><tr><td>0</td><td>Command on the data bus is executed.</td></tr><tr><td>1</td><td>Command is executed from address 0038H.</td></tr><tr><td>2</td><td>Vector system</td></tr></table></td></tr>
<tr><td></td><td>$\overline{INT_1}$</td><td>5</td><td>Input</td><td rowspan="2">Interrupt 1, 2: Maskable interrupt level 1 and 2 request terminals. Vector system</td></tr>
<tr><td></td><td>$\overline{INT_2}$</td><td>6</td><td>Input</td></tr>
<tr><td>DMA signal</td><td>$\overline{DREQ_0}$ (Commonly used with CKA0.)</td><td>50</td><td>Input</td><td>DMA Request for Channel 0: Internal DMAC transfer (to channel 0) request terminal. With this signal, the internal DMAC can operate in synchronization with the external I/O devices. The internal DMAC channel 0 supports the following transfer types:<br>(a) Between memories<br>(b) Between memory and I/O<br>(c) Between memory and memory map I/O<br>This terminal is multiplexed with CKA0 terminal. When DMA channel 0 transfer mode is set to "Between memory and I/O (including memory map I/O)", $\overline{DREQ_0}$ terminal serves as an input terminal.</td></tr>
<tr><td></td><td>$\overline{TEND_0}$</td><td>55</td><td>Output</td><td>Transfer End for Channel 0: Internal DMAC channel 0 transfer sent signal. Driven LOW in synchronization with the last data transfer write cycle. This terminal is multiplexed with CKA1 terminal. When ASCI control register A channel 1 is set to "1", it serves as $\overline{TEND_0}$ terminal.</td></tr>
<tr><td></td><td>$\overline{DREQ_1}$</td><td>59</td><td>Input</td><td>DMA Request for Channel 1: Internal DMAC transfer (to channel 1) request terminal. Channel 1 supports only transfer between memory and I/O.</td></tr>
</table>

**HD64180 (IC2)**

| Classification | Code | Terminal No. | | Name and pin function |
|---|---|---|---|---|
| DMA signal | $\overline{TEND_1}$ | 60 | Output | Transfer End for channel 1: Internal DMAC trasnfer (to channel 1) end signal.Driven LOW in synchronization with the last data transfer write cycle. |
| Serial I/O signal (ASCI channel 0) | $TXA_0$ | 48 | Output | Transfer Data for Asynchronous SCI Channel 0: ASCI channel 0 transfer data terminal. |
| | $RXA_0$ | 49 | Input | Receive Data for Asynchronous SCI Channel 0: ASCI channel 0 receive data terminal. |
| | CKA0 (Commonly used with DREQ0) | 50 | Input/Output | Clock for Asynchronous SCI Channel 0: ASCI channel 0 clock input/output terminal. This terminal is multiplexed with transfer request signal DREQ0 for internal DMAC channel 0. When DMA channel 0 is oeprated in the transfer mode of "Between memory and I/O", it cannot be used as a clock output terminal. |
| | $\overline{RTS_0}$ | 45 | Output | Request to Send for Asynchronous SCI Channel 0: One of the ASCI channel 0 modem control signals. The output can be controlled to LOW and HIGH by the program. |
| | $\overline{CTS_0}$ | 46 | Input | Clear To Send for Asynchronous SCI Channel 0: One of the ASCI channel 0 modem control signals. With this input, transmission can be controlled. |
| Serial I/O signal (ASCI channel 0) | $\overline{DCD_0}$ | 47 | Input | Data Carrier Detect for Asynchronous SCI Channel 0: One of the ASCI channel 0 modem control signals. With this input, the operation of the receiver section can be reset. |
| Serial I/O signal (ASCI channel 1) | TXA1 | 52 | Output | Transfer Data for Asynchronous SCI Channel 1: ASCI channel 1 transfer data terminal. |
| | RXA1 | 54 | Input | Receive Data for Asynchronous SCI Channel 1: ASCI channel 1 receive data terminal. |
| | CKA1 (Commonly used with $\overline{TEND_0}$.) | 55 | Input/Output | Clock for Asynchronous SCI channel 1: ASCI channel 1 clock input/output terminal. This terminal is multiplexed with internal DMAC channel 0 transfer end signal $\overline{TEND_0}$. When CKA1D bit of the ASCI control register A channel 1 is set to "0", it can be used as a clock input/output terminal. |
| | $\overline{CTS_1}$ (Commonly used with RXS.) | 57 | Input | Clear to SEnd for Asynchronous SCI Channel 1: ASCI channel 1 modem control signal. With this input, transmission can be controlled. This terminal is multiplexed with RXS signal described below. ASCI status register channel 1 CTS1E bit is used to select this terminal. |
| Serial I/O signal (CSI/O) | TXS | 56 | Output | Transfer Data for Serial I/O Port: CSI/O serial output terminal. |
| | RXS (Commonly used with CTS1.) | 57 | Input | Receive Data for Serial I/O Port: CSI/O serial input terminal. This terminal is multiplexed with CTS1, and selection is made by the program. |
| | CKS | 58 | Input/Output | Clock for Serial I/O Port: Used as CSI/O clock input/output terminal. |
| Timer | TOUT (Commonly used with A18.) | 31 | Output | Timer Out: Timer output terminal of timer 1. Multiplexed with A18. Selection is made with TOC0 and TOC1 bits of the timer control register. |

**Common terminal descriptions HD64180 (IC2)**

| Code | Terminal No. | Selection method |
|---|---|---|
| A18/TOUT | 31 | A18 is selected immediately after resetting. When either one or both of TOC1 bit and TOC0 bit is/are set to "1", TOUT is selected. When the both bits are set to "0", A18 is selected again. |
| CKA0/$\overline{DREQ_0}$ | 50 | CKA0 is selected immediately after resetting. Either one of DM1 bit or SM1 bit of DMAC DMA mode register is "1", CKA0 is compulsorily changed to an input terminal though it is set as an output terminal, and CKA0 can be used as $\overline{DREQ_0}$ terminal. |
| CKA1/$\overline{TEND_0}$ | 55 | CKA1 terminal is selected immediately after resetting. When CKA1D bit of the ASCI control register A channel 1 is set to "1", it can be used as TEND0 terminal. When the bit is reset to "0", the terminal returns to CKA1. |
| RXS/$\overline{CTS_1}$ | 57 | RXS terminal is selected immediately after resetting. When CTS1E bit of ASCI status register channel 1 is set to "1", it can be used as $\overline{CTS_1}$ terminal. In this case, however, the function of RXS input terminal is not prohibited. |

## G.A.(LZ9AH11) Pin Assignment

OBF ⇨ CMOS level unless otherwise specified.
IBF ⇨ TTL level
(However, RWE input is at CMOS level.)

| Pin No. | Name | I/O BUF | Remark |
|---|---|---|---|
| 1 | GND | GND | Power ground |
| 2 | CABS1 | OBF | RTCSL1 |
| 3 | $\overline{\text{MODMS}}$ | OBF | Modem chip select |
| 4 | $\overline{\text{EXIO}}$ | OBF | NU. |
| 5 | $\overline{\text{RESET}}$ | IBFU | Reset input |
| 6 | $\overline{\text{DREQ0}}$ | OBF2M | DMA request 0 |
| 7 | $\overline{\text{DREQ1}}$ | OBF2M | DMA request 1 |
| 8 | $\overline{\text{INT1}}$ | OBF2M | Interrupt 1 |
| 9 | $\overline{\text{INT2}}$ | OBF2M | Interrupt 2 |
| 10 | $\overline{\text{IORD}}$ | IBF | I/O read |
| 11 | $\overline{\text{IOWR}}$ | IBF | I/O write |
| 12 | D7 | IOBF2M | CPU data bus |
| 13 | D6 | IOBF2M | CPU data bus |
| 14 | D5 | IOBF2M | CPU data bus |
| 15 | D4 | IOBF2M | CPU data bus |
| 16 | D3 | IOBF2M | CPU data bus |
| 17 | D2 | IOBF2M | CPU data bus |
| 18 | D1 | IOBF2M | CPU data bus |
| 19 | D0 | IOBF2M | CPU data bus |
| 20 | VCC | +5V | Power +5V |
| 21 | GND | GND | Power GND |
| 22 | A18 | IBF | CPU address |
| 23 | A17 | IBF | CPU address |
| 24 | A16 | IBF | CPU address |
| 25 | A15 | IBF | CPU address |
| 26 | A14 | IBF | CPU address |
| 27 | A13 | IBF | CPU address |
| 28 | A7 | IBF | CPU address |
| 29 | A6 | IBF | CPU address |
| 30 | A5 | IBF | CPU address |
| 31 | A4 | IBF | CPU address |
| 32 | A3 | IBF | CPU address |
| 33 | A2 | IBF | CPU address |
| 34 | A1 | IBF | CPU address |
| 35 | A0 | IBF | CPU address |
| 36 | $\overline{\text{ROMCS}}$ | OBF | ROM chip select |
| 37 | $\overline{\text{RAMS0}}$ | OBF | RAM chip select 0 |
| 38 | $\overline{\text{RAMS1}}$ | OBF | RAM chip select 1 |
| 39 | CLK12M | IBF | Clock 12MHz |
| 40 | GND | GND | Power GND |
| 41 | GND | GND | Power GND |
| 42 | B7 | IBF | A/D input |
| 43 | B6 | IBF | A/D input |
| 44 | B5 | IBOFX | A/D input |
| 45 | B4 | IBOFX | A/D input |
| 46 | B3 | IBOFX | A/D input |
| 47 | B2 | IBOFX | A/D input |
| 48 | B1 | IBOFX | A/D input |
| 49 | B0 | IBOFX | A/D input |
| 50 | ADCK | IOBFC | AD clock |
| 51 | TEST | IBFD | Test pin |
| 52 | RAD7 | IOBF2M | Read RAM data bus |
| 53 | RAD6 | IOBF2M | Read RAM data bus |
| 54 | RAD5 | IOBF2M | Read RAM data bus |
| 55 | RAD4 | IOBF2M | Read RAM data bus |
| 56 | RAD3 | IOBF2M | Read RAM data bus |
| 57 | RAD2 | IOBF2M | Read RAM data bus |
| 58 | RAD1 | IOBF2M | Read RAM data bus |
| 59 | RAD0 | IOBF2M | Read RAM data bus |
| 60 | GND | GND | Power GND |
| 61 | VCC | +5V | Power +5V |
| 62 | $\overline{\text{RWE}}$ | IOBFC2M | ✳ Input at CMOS level |
| 63 | $\overline{\text{ROE}}$ | OBF2M | |
| 64 | RA12 | OBF2M | Read RAM address |
| 65 | RA11 | OBF2M | Read RAM address |
| 66 | RA10 | OBF2M | Read RAM address |
| 67 | RA9 | OBF2M | Read RAM address |
| 68 | RA8 | OBF2M | Read RAM address |
| 69 | RA7 | OBF2M | Read RAM address |
| 70 | RA6 | OBF2M | Read RAM address |
| 71 | RA5 | OBF2M | Read RAM address |
| 72 | GND | GND | GND |
| 73 | RA4 | OBF2M | Read RAM address |
| 74 | RA3 | OBF2M | Read RAM address |
| 75 | RA2 | OBF2M | Read RAM address |
| 76 | RA1 | OBF2M | Read RAM address |
| 77 | RA0 | OBF2M | Read RAM address |
| 78 | $\overline{\text{PHIT}}$ | OBF | $\overline{\phi T}$ |
| 79 | $\overline{\text{PHIBL}}$ | OBF | $\overline{\phi BL}$ |
| 80 | GND | GND | Power GND |
| 81 | GND | GND | Power GND |
| 82 | $\overline{\text{PHISH}}$ | OBF | $\overline{\phi SH}$ |
| 83 | PHIR | OBF | $\phi R$ |
| 84 | PHIA | OBF | CCD clock $\overline{\phi 1}$ |
| 85 | PHIB | OBF | CCD clock $\overline{\phi 2}$ |
| 86 | $\overline{\text{GTW}}$ | OBF2M | Automatic contrast peak hold region |
| 87 | $\overline{\text{B/H}}$ | OBF2M | Automatic contrast Binary/Half tone |
| 88 | $\overline{\text{PGST}}$ | OBF2M | Automatic contrast peak hold initialization |
| 89 | PNLCK | OBF2M | NU. |
| 90 | TMRCK | OBF2M | NU. |
| 91 | BZ | OBF | Buzzer clock output (2KHz) |
| 92 | PNSEL | IBFU | Panel I/F select |
| 93 | IO4 | IBFU | $\overline{\text{SPMUTE}}$ |
| 94 | IO3 | OBF | DPON |
| 95 | IO2 | OBF | RS |
| 96 | IO1 | IOBFU | R/W |
| 97 | IO0 | IOBFU | E |
| 98 | MD7 | IOBFU | EXHS2 |
| 99 | MD6 | IOBFU | EXHS1 |
| 100 | VCC | +5V | Power +5V |
| 101 | GND | GND | Power GND |
| 102 | MD5 | IOBFU | DP/DTMF |
| 103 | MD4 | IOBFU | $\overline{\text{SEN4}}$ |
| 104 | MD3 | IOBFU | $\overline{\text{SEN3}}$ |
| 105 | MD2 | IOBFU | $\overline{\text{SEN2}}$ |
| 106 | MD1 | IOBFU | $\overline{\text{SEN1}}$ |
| 107 | MD0 | IOBFU | $\overline{\text{SEN0}}$ |

| Pin No. | Name | I/O BUF | Remark |
|---|---|---|---|
| 108 | PON | TOBF | VTHON |
| 109 | LEDON | OBF | LED ON |
| 110 | CUTSNS | IOBFU | |
| 111 | CUT DRV | OBF | |
| 112 | $\overline{\text{LATCH}}$ | OBF | $\overline{\text{STRB2}}$ |
| 113 | PCLK | OBF | Thermal data clock |
| 114 | PDATA | OBF | Thermal data |
| 115 | STRB9 | IOBF2M | LD7 (LCD Data) |
| 116 | STRB8 | IOBF2M | LD6 (LCD Data) |
| 117 | STRB7 | IOBF2M | LD5 (LCD Data) |
| 118 | STRB6 | IOBF2M | LD4 (LCD Data) |
| 119 | STRB5 | IOBF2M | $\overline{\text{MDMRST}}$ |
| 120 | GND | GND | Power GND |
| 121 | GND | GND | Power GND |
| 122 | STRB4 | IOBF2M | AM (LED) |
| 123 | STRB3 | IOBF2M | MAN (LED) |
| 124 | STRB2 | IOBF2M | AUTO (LED) |
| 125 | STRB1 | OBF | $\overline{\text{STRB1}}$ |
| 126 | THDT | IBF | Thermistor data |
| 127 | STC | OBFN | Thermistor data conversion signal |
| 128 | $\overline{\text{TPB}}$ | IOBFX | Motor output |
| 129 | $\overline{\text{TPA}}$ | IOBFX | Motor output |
| 130 | TPB | IOBFX | Motor output |
| 131 | TPA | IOBFX | Motor output |
| 132 | $\overline{\text{RPB}}$ | IOBFX | N.U |
| 133 | $\overline{\text{RPA}}$ | IOBFX | N.U |
| 134 | RPB | IOBFX | N.U |
| 135 | RPA | IOBFX | N.U |
| 136 | $\overline{\text{FB4S}}$ | IOBF2M | SDT |
| 137 | $\overline{\text{PAPB4}}$ | IOBF2M | MTOUT |
| 138 | $\overline{\text{DRSNS}}$ | IOBF2M | Door sensor |
| 139 | $\overline{\text{PSNS}}$ | IOBF2M | Paper sensor |
| 140 | VCC | +5V | Power +5V |
| 141 | GND | GND | Power GND |
| 142 | $\overline{\text{ORGSNS}}$ | IOBF2M | Document sensor |
| 143 | $\overline{\text{FRSNS}}$ | IOBF2M | Front sensor |
| 144 | $\overline{\text{RHS}}$ | IOBF2M | Hook detection |
| 145 | $\overline{\text{CI}}$ | IOBF2M | CI detection |
| 146 | $\overline{\text{HS2}}$ | IOBF2M | Pulse or Tone |
| 147 | $\overline{\text{HS1}}$ | IOBF2M | Polarity reversion detection 1 |
| 148 | CONT | OBF | PLG Control |
| 149 | AMPMUT | OBF | MPXA (LIU Control) |
| 150 | SPEAK | OBF | MPXB (LIU Control) |
| 151 | CML | OBF | CML relay ON |
| 152 | STRBSL | IBFU | LCD I/F Selection |
| 153 | TO4 | OBF | MPXC (LIU Control) |
| 154 | TO3 | OBF | KEN4A (Key Enable) |
| 155 | TO2 | IOBF | KEN3A (Key Enable) |
| 156 | TO1 | IOBF | KEN2A (Key Enable) |
| 157 | TO0 | IOBF | KEN1A (Key Enable) |
| 158 | MRL | OBF | ON hook relay |
| 159 | CABS2 | OBF | RTCSL2 |
| 160 | GND | GND | Power GND |

IBF : Input buffer
IBFD : Input buffer with pull-down
IBFU : Input buffer with pull-up
OBF : Output buffer
OBF2M : Output buffer (2mA)
IOBF :
IOBFU : I/O buffer with pull-up
IOBF2M: I/O buffer (2mA)
IOBFC2M: I/O buffer (2mA: CMOS I/O)
IOBFX : I/O buffer (test input)

## (2) Panel control block

The following controls are performed through G/A according to commands from the main CPU.

- Operation panel key scanning
- Operation panel LCD display

## (3) Mechanism/recording control block

- Recording control block diagram (1)

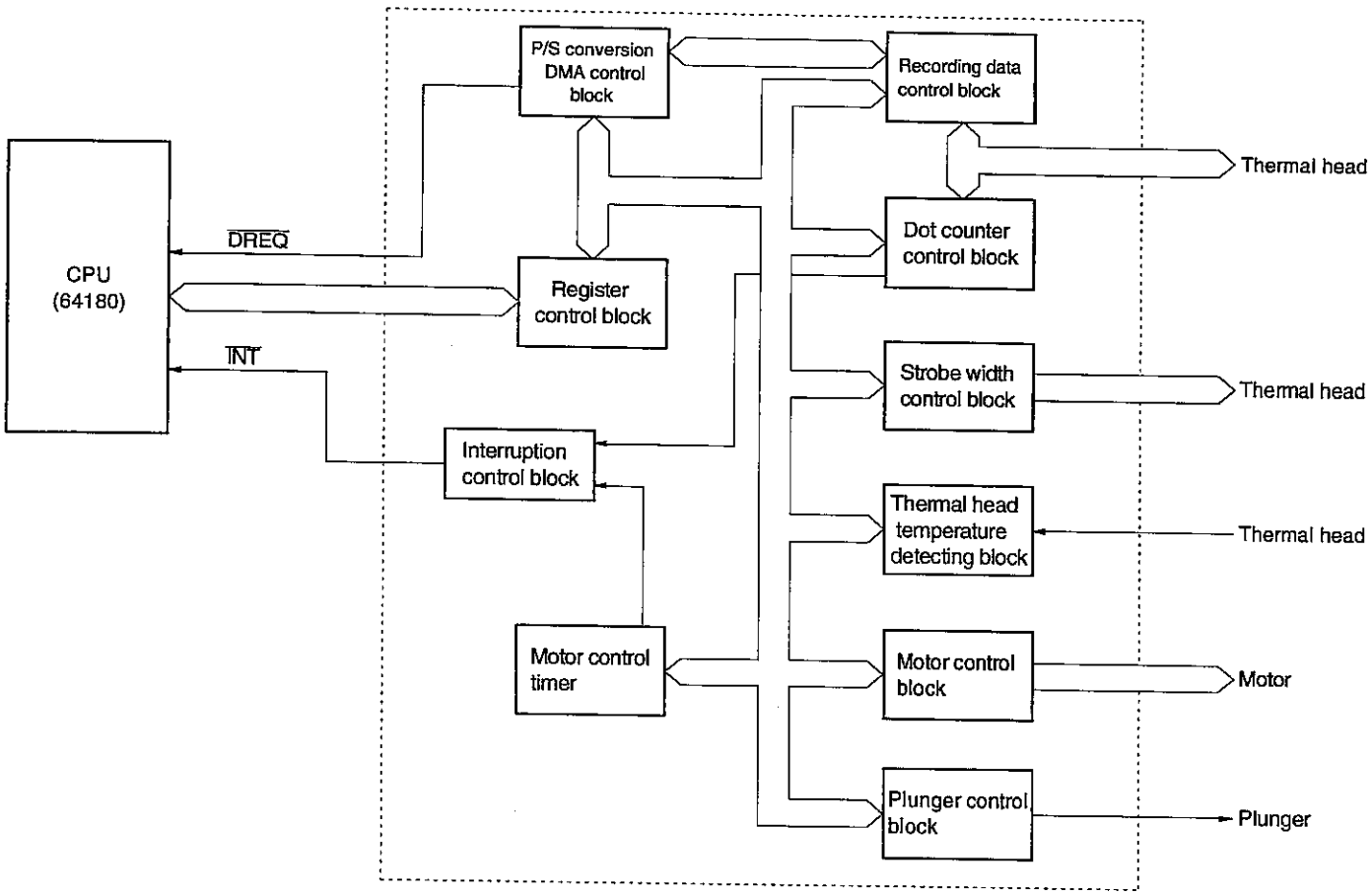



Fig. 4

The recording control block is composed as shown above. The descriptions are given below:

- P/S conversion block, DMA control block, recording data control block
  The recording data is transferred to the thermal head by these blocks. First, the DMA sends DREQ to the CPU. The CPU transfers the recording data to the P/S conversion block by means of DMA. The transferred data is converted into serial data and sent through the recording data control block to the thermal head together with a clock.
- Strobe width control block
  This block controls strobe width which determines the printing density of recording by the thermal head. Parameters of printing frequency and temperature are inputted to the CPU to set an appropriate strobe width according to an algorithm. The printing density is maintained at a constant level in this manner.
- Dot counter control block
  This block counts the number of black dots in the transferred printing data for correction of printing density.
- Thermal head temperature detecting block
  This block converts the thermal head thermistor value into a digital value by conversion of voltage pulse width for correction of printing density. (Fig.5)
- Motor control block
  This block supplies phase output for control of the TX and RX motors. With register setting, it controls phase switching timing of the motor.
- Thermalhead temperature detection

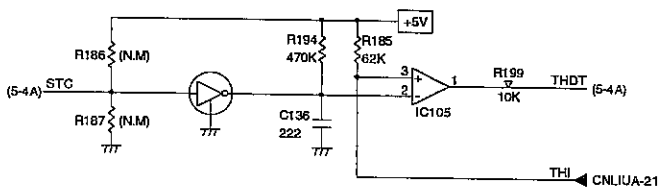



Fig. 5

This signal is to monitor the data of the thermister (inside the thermalhead) to protect the thermalhead.

## (4) Image signal processing block

The image signal processing block is composed of the following:

① CCD sensor drive block (LZ9AH11 (IC5)).

② A/D converter block (TLS1019 (IC3)).

③ Binary coding processing block

- LZ9AH11 (IC5)
- LH5268 (IC6)

Descriptions on each block are given below:

### 1) CCD drive block

The Clock necessary for CCD drive is generated in LZ9AH11.

- $\phi 1$ (Synchronization clock)
- $\phi 2 (= \overline{\phi 1})$ (Synchronization clock)
- $\phi R$ (Output buffer reset clock)
- $\phi T$ (Transmission clock)

### 2) A/D Converter

A 6-bit, high-speed A/D converter TLS1019 (IC3: 30 pin SSOP) is used to supply A/D converted digital video signals to the binary coding processing block according to the clock signal from LZ9AH11.

### 3) Binary coding processing block

Digital video signals inputted in 6-bit accuracy by gate array LZ9AH11 (IC5) which incorporates various algorithms required for binary coding, and RAM (IC6) which stores data necessary for processing are converted into binary data, and P/S converted, and DMA- transmitted to the line memory of the main CPU.
The algorithms for binary coding in the processing block are as follows:

- Shading correction
- OR process (in the standard mode)
- Focus correction
- Auto contrast process
- Intermediate Half-tone expression process

## (5) Modem (R96DFXL) block

### INTRODUCTION

The Rockwell R96DFXL MONOFAX modem is a synchronous 9600 bits per second (bps) half-duplex modem with error detection and DTMF reception. It has low power consumption and requires only a single +5VDC power supply. The modem is housed in a single VLSI device package.
The modem can operate over the public switched telephone network (PSTN) through line terminations provided by a data access arrangement (DAA).
The R96DFXL is designed for use in Group 3 facsimile machines. The modem satisfies the requirements specified in CCITT recommendations V.29, V.27 ter, V.21 Channel 2 and T.4, and meets the binary signaling requirements of T.30.
The modem can operate at 9600, 7200, 4800, 2400, or 300 bps, and also includes the V.27 ter short training sequence option.
The modem can also perform HDLC framing according to T.30 at 9600, 7200, 4800, 2400, or 300 bps.
The modem features a programmable DTMF receiver and three programmable tone detectors which operate concurrently with the V.21 channel 2 receiver.
The voice mode allows the host computer to efficiently transmit and receive audio signals and messages.
The modem is available in either a 100-pin plastic quad flat pack (PQFP) or a 64-pin quad in-line package (QUIP).
General purpose input/output (GPIO) pins are available for host assignment in the 100-pin PQFP.
The modem's small size, single voltage supply, and low power consumption allow the design of compact system enclosures for use in both office and home environments.
MONOFAX is a registered trademark of Rockwell International.

### FEATURES

- Group 3 facsimile transmission/reception
  - CCITT V.29, V.27 ter, T.30, V.21 Channel 2, T.4
  - HDLC Framing at all speeds
- V.27 ter short train
- Concurrent DTMF, FSK, and tone reception
- Voice mode transmission/reception
- Half-duplex (2-Wire)
- Programmable maximum transmit level:
  0 dBm to –15 dBm
- Programmable transmit analog attentuation:
- 0 dB to 14 dB in 2 dB steps
- Receive dynamic range: 0 dBm to –43 dBm
- Programmable dual tone generation
- Programmable tone detection
- Programmable turn-on and turn-off thresholds
- Programmable interface memory interrupt
- Diagnostic capability
  - Allows telephone line quality monitoring
- Equalization
  - Automatic adaptive equalizer
  - Fixed digital compromise equalizer
- DTE interface: two alternate ports
  - Selectable microprocessor bus (6500 or 8085)
  - CCITT V.24 (EIA-232-D compatible) interface
- TTL and CMOS compatible
- Low power consumption: 275 mW (typical)
- Single Package
  - 100-pin PQFP
  - 64-pin QUIP
- Single +5VDC power supply
- Software compatible with R96MFX, R96EFX, R96DFX, and R96VFX modems

## R96DFXL Hardware Interface Signals

### Pin Signals – 100-Pin PQFP

| Pin No. | Signal Name | I/O Type |
|---|---|---|
| 1 | GP03 | IA/OB |
| 2 | GP04 | IA/OB |
| 3 | GP05 | IA/OB |
| 4 | GP06 | IA/OB |
| 5 | GP07 | IA/OB |
| 6 | 0VD2 | GND |
| 7 | 0VD2 | GND |
| 8 | D7 | IA/OB |
| 9 | D6 | IA/OB |
| 10 | D5 | IA/OB |
| 11 | D4 | IA/OB |
| 12 | D3 | IA/OB |
| 13 | D2 | IA/OB |
| 14 | D1 | IA/OB |
| 15 | D0 | IA/OB |
| 16 | 0VD2 | GND |
| 17 | 0VA | GND |
| 18 | RAMPIN | R |
| 19 | NC | |
| 20 | NC | |
| 21 | 0VA | GND |
| 22 | +5VD2 | PWR |
| 23 | 0VD1 | GND |
| 24 | SWGAINI | R |
| 25 | ECLKIN1 | R |
| 26 | SYNCIN1 | R |
| 27 | NC | |
| 28 | NC | |
| 29 | NC | |
| 30 | 0VA | GND |
| 31 | NC | |
| 32 | NC | |
| 33 | NC | |
| 34 | DAIN | R |
| 35 | ADOUT | R |
| 36 | BYPASS | IC |
| 37 | RCVI | R |
| 38 | TXLOSS3 | IC |
| 39 | TXLOSS2 | IC |
| 40 | TXLOSS1 | IC |
| 41 | NC | |
| 42 | NC | |
| 43 | 0VA | GND |
| 44 | TXOUT | AA |
| 45 | RXIN | AB |
| 46 | +5VA | PWR |
| 47 | 0VA | GND |
| 48 | AGD | R |
| 49 | AOUT | R |
| 50 | 0VD1 | GND |
| 51 | NC | |
| 52 | $\overline{\text{IRQ}}$ | OC |
| 53 | $\overline{\text{WRITE}}$-R/$\overline{\text{W}}$ | IA |
| 54 | $\overline{\text{CS}}$ | IA |
| 55 | $\overline{\text{READ}}$-$\phi$2 | IA |
| 56 | RS4 | IA |
| 57 | RS3 | IA |
| 58 | RS2 | IA |
| 59 | RS1 | IA |
| 60 | RS0 | IA |
| 61 | GP13 | IA/OB |
| 62 | NC | |
| 63 | GP11 | IA/OB |
| 64 | $\overline{\text{RTS}}$ | IA |
| 65 | $\overline{\text{EN85}}$ | R |
| 66 | 0VD2 | GND |
| 67 | $\overline{\text{PORI}}$ | ID |
| 68 | XTLI | R |
| 69 | XTLO | R |
| 70 | XCLK | OD |
| 71 | YCLK | OD |
| 72 | +5VD1 | PWR |
| 73 | DCLKI | R |
| 74 | SYNCIN2 | R |
| 75 | GP16 | IA/OB |
| 76 | GP17 | IA/OB |
| 77 | 0VD2 | GND |
| 78 | $\overline{\text{CTS}}$ | OA |
| 79 | TXD | IA |
| 80 | 0VD2 | GND |
| 81 | 0VD2 | GND |
| 82 | DCLK | OA |
| 83 | EYESYNC | OA |
| 84 | EYECLKX | OA |
| 85 | EYECLK | OA |
| 86 | EYEX | OA |
| 87 | ADIN | R |
| 88 | DAOUT | R |
| 89 | 0VD2 | GND |
| 90 | EYEY | OA |
| 91 | GP21 | IA/OB |
| 92 | 0VD2 | GND |
| 93 | GP20 | IA/OB |
| 94 | GP19 | IA/OB |
| 95 | RXD | OA |
| 96 | $\overline{\text{RLSD}}$ | OA |
| 97 | 0VD2 | GND |
| 98 | RCVO | R |
| 99 | SWGAINO | R |
| 100 | GP02 | IA/OB |

**Notes:**

1. NC = No connection; leave pin disconnected (open).
2. I/O Type: Digital signals: see Table 9;
   Analog signals: see Table 10.
3. R = Required modem inter-connection; no connection to host equipment.

# [3] Description of CCD PWB

The CCD board picks up optical information from the document, converts it into an electrical (analog) signal and transfers it to the control board.

## (1) Block diagram

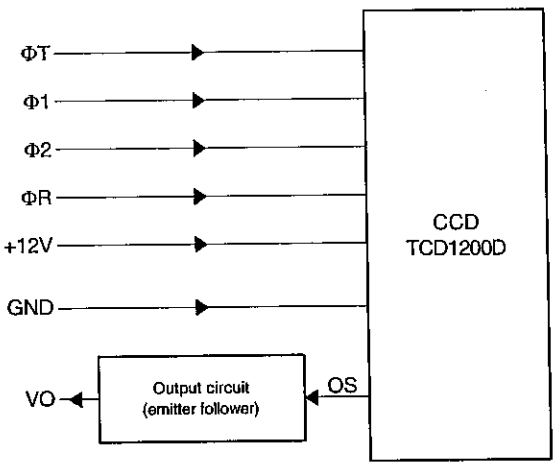



Fig. 8

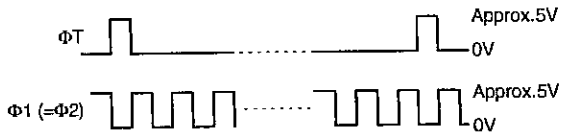
## (2) Description of blocks

### 1. CCD

The TCD1200D is a highly sensitive charged coupled image sensor that consists of 2160 picture elements.
Receiving four drive signals (ϕT, ϕ2, ϕ1, ϕR) from the control board, the transferred photoelectric analog signal OS is impedance converted, and the signal VO, is supplied to the control board.

### 2. Waveforms

1. ϕ1, ϕ2 (= $\overline{\phi 1}$) ... signals within the control board.




2. OS ϕ

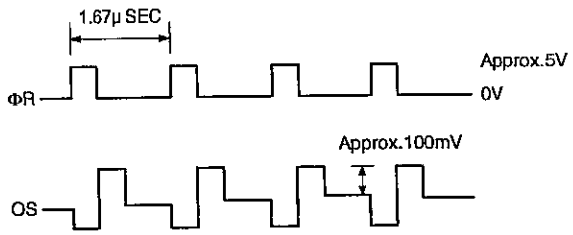



Fig. 9

# [4] Description of TEL/LIU PWB & power supply PWB

## [TEL section]

### 1. Block diagram

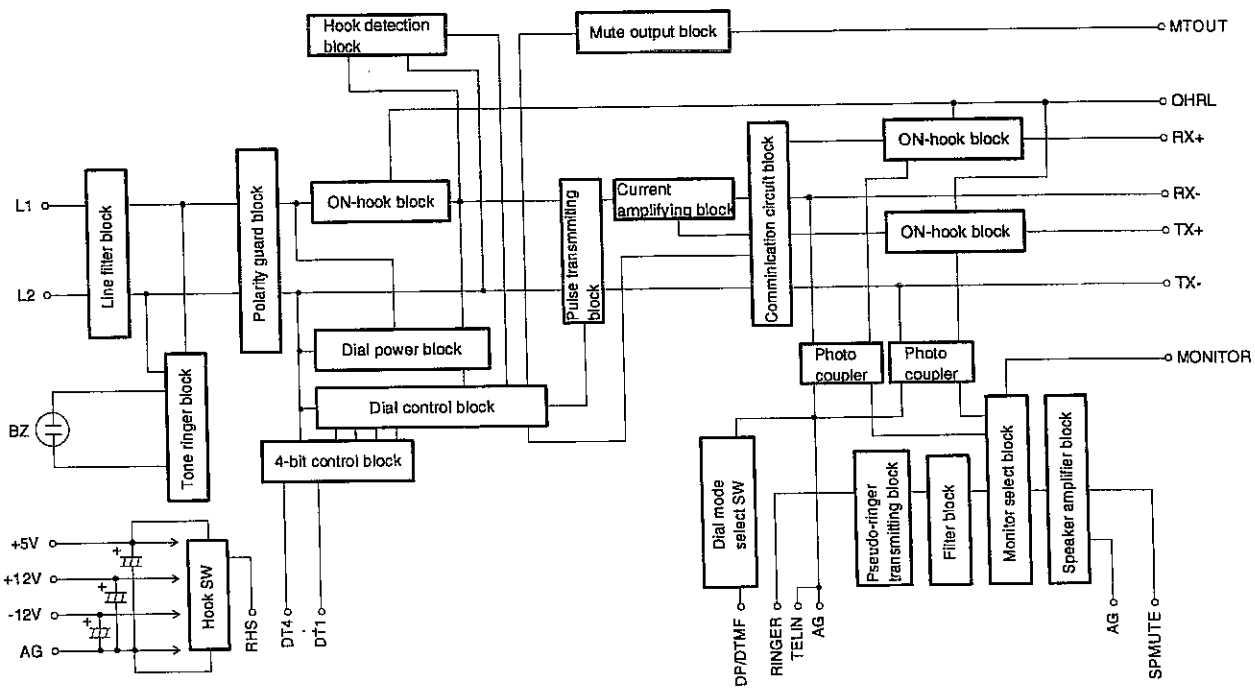



Fig. 10

### 2. General

This unit composed of the following 16 blocks;

(1) Line filter block
(2) Tone ringer block
(3) Polarity guard block
(4) ON-hook block
(5) Hook detection block
(6) Dialer power block
(7) Dial control block
(8) 4-bit control block
(9) Pulse transmitting block
(10) Mute output block
(11) Current amplifying block
(12) Communication circuit block
(13) Speaker amplifier block
(14) Monitor select block

## 3. Description on each block

### (1) Line filter block

This block is composed of a coil (L16) and is used to remove noise from the telephone line

### (2) Tone ringer block

This block is composed of ringer IC (IC13). Reception signal is applied to the ringer IC to oscillate the ringer IC. The oscillation level can be varied in three steps with resistors (R153 and R154) and select switch (SW1).

### (3) Polarity guard block

This block is composed of diode bridge (REC1) and is used to supply a current and voltage of the same polarity to the telephone circuit regardless of reversion of polarity in the telephone circuit.

### (4) ON-hook block

This block is composed of on-hook relays (RY3, IC5), RY3 is for connection of the telephone circuit, and IC5 is for speaker reception.

### (5) Hook detection block (HYB IC internal)

This block is composed of a transistor, and is used to detect on/off of the hook switch (SW4) and on-hook relay (RY3) and to inform the dial IC (IC17) of connection/open of the telephone circuit.

### (6) Dialer power block (HYB IC internal)

This block is composed of diodes, transisitors capacitors and zenor diode and is used to supply power to the dial IC.

### (7) Dial control block

This block composed of dial IC (IC2) and crystal/ceramic oscillator. The dial IC is controlled with 4-bit signal supplied from the CPU in the facsimile machine.

### (8) 4-bit control block

This block is composed of photo couplers (PC8) and transistors (Q102) and is used to supply 4 bit data from the CPU through the photo coupler to the dial IC.

### (9) Pulse transmitting block(HYB IC internal)

This block is composed of FET/transistor and zener diode.
Dial pulses supplied from the dial IC are amplified by the FET and passed through the zener diode to the telephone line.

### (10) Mute output block

This block is composed of photo coupler (PC7) is used to infrom the facsimile machine of mute state during transmission of DTMF signal.

### (11) Current amplifying block

This block is composed of transistor (HYB IC) and is used as a supplemental circuit for current amplification in the speech IC.

### (12) Communication circuit block

This block is composed of the speech IC (HYB IC) and is equipped with 2-line/4-line select circuit, auto pad circuit, and all other circuit.

### (13) Speaker amplifier block

This block is composed of amplifier IC (IC6) and is used to amplity voice signal in monitoring or in speaker reception with the amplifier IC and to supply to the speaker.

### (14) Monitor select block

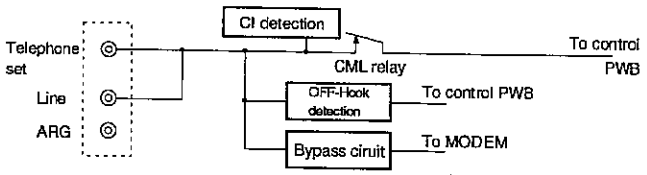
This block is composed of multiplexer (IC5), and is used to select monitor signal from Main Board.

## [LIU section]

## 1. General

The LIU PWB performs interface between TEL line and facsimile unit, and allows facsimile communication.

## 2. Block diagram




## 3. Description of each block

The LIU section is composed of the line select circuit which selects FAX side from TEL side, the ringer detect circuit which detects CI signal (ringer signal), the hybrid IC (IC1) which detects signals from facsimile communication network, and the bypass circuit.

### (1) Line select circuit

This circuit is composed of the line select relay (CML relay) and its drive circuit, and controlled by the CML signal from the control section. The relay contact is a continuous contact which prevents line interruption when the relay is operating. (make before break)

### (2) Ringer detection circuit

The circuit is composed of phote coupler PC9, resistor, capacitor and IC10, and is connected in parallel to line. When the circuit receives ringer signal from line, PC9 output voltage is generated, integrated, and passed to the control section as ringer detection signal (CI).

### (3) Off-hook detecting circuit

When the line is closed by litting the handset, a current is passed through the IC1 and IC14 which generate an output to the control PWB as off-hook signal ($\overline{HS1}$ and $\overline{HS2}$).

### (4) Bypass circuit

This circuit allows the MODEM to detect signals from the line even in the standby state. The signals are amplified by IC7 and passed to the MODEM.

## [Power supply section]

### 1. Block diagram

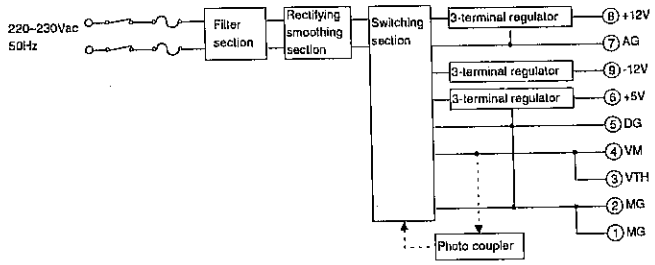



Fig. 1. Block diagram

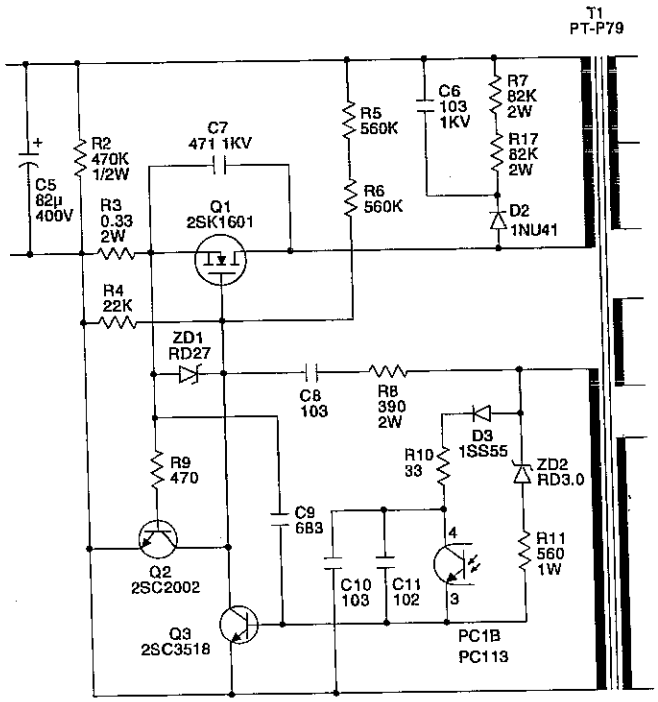
### 2. General description

The input voltage is 187V AC - 264V AC conforming to UL standards. The outputs are +24V(VM), +5V, +12V, -12V. The overvoltage protection function for protection of the load in case of power abnormality and the overcurrent protection function for protection of the power supply itself from overload are added.

### 3. Operational description

When 230 V/AC power is supplied, it is passed through a noise filter to the rectifier section where it is smoothed to about 300V then supplied to the invertor section. The invertor section employs one-transistor ON/OFF self-excited invertor (R.C.C. system) and a stable DC voltage is supplied to the secondary side.
The operation of each section is described below:

#### 3.1. Invertor section




When the voltage across R4 reaches the gate ON voltage through R5, R6, and R4, Q1 begins to turn ON, flowing a current from pin1 of T1 primary winding to pin3. Then a voltage is generated from pin5 of auxiliary winding to pin4, turning Q1 gate ON completely. The drain current increases linearly to store energy in the primary winding. However, voltage across R3 turns ON Q2 thorough R9 when the drain current reaches a certain level. As a result, Q1 gate voltage falls below the threshold voltage (about 4V) of the gate and Q1 turns off. Simultaneously when Q1 turns off, the energy stored in the primary winding is induced in the secondary winding to bias the rectifier diodes D4, D5, D6, and D7 forwardly, smoothing each output capacitor. Thus a DC voltage is obtained.

#### 3.2. Control section

(1) +24V (VM) control
A voltage is generated in the secondary side by repeated operations of 3.1, and the output in the secondary side is divided by R14, VR1, and R15 to be inputted to Q4. The divided voltage is adjusted to about 6.2V by VR1. Q4 always monitors the divided output voltage. When the output voltage exceeds +24V, the divided voltage also exceeds 6.2V and Q4 judges it as an increase in the output voltage. Then photocoupler PC1 is lit through R13 to turn on the transistor in the light receiving side, supplying a current to the base of Q3, turning off Q1. (The current which is to be passed through the additional line, R8, and C8 to R4 is bypassed by Q3). Resultantly, ON time of Q1 is shortened and the energy stored in the primary winding is decreased, limiting the increase in the output voltage. When the output voltage begins to decrease, the light quantity of PC1 is decreased to lengthen the ON time to Q1. As a result the energy in the primary winding is increased to compensate for the decrease in the output voltage.
The negative feedback control is repeated to stabilize the output voltage.

(2) +5V, +12V, -12V control
The outputs of +5V, +12V, and -12V are stabilized by the three-terminal regulator ICs (IC3, IC1, and IC2). The overcurrent protection function protects the regulator ICs themselves.

#### 3.3. Overcurrent protection function

When the output current in the secondary side increases to become an overcurrent or short R3/R4 detects the drain current to turn on Q2, The gate voltage of Q1 is controlled to shorten ON time of Q1 to protect the circuit from the overcurrent.

#### 3.4. Overvoltage protection function

When the output voltage is abnormally increased and ZD5 zener voltage exceeds about 30V, ZD5 is shorted to operate the same procedure as the overcurrent protection function. To reset, turn off the AC switch, remove the cause, and replace ZD5 with a new one.

#### 3.5. High temperature protection circuit

Thermal fuse F3 included in the power circuit is blown when the surface temperature of rectifier D1 exceeds about 115 degrees Centigrade. (about 239°F)

### 3.6 Rush current limiting circuit

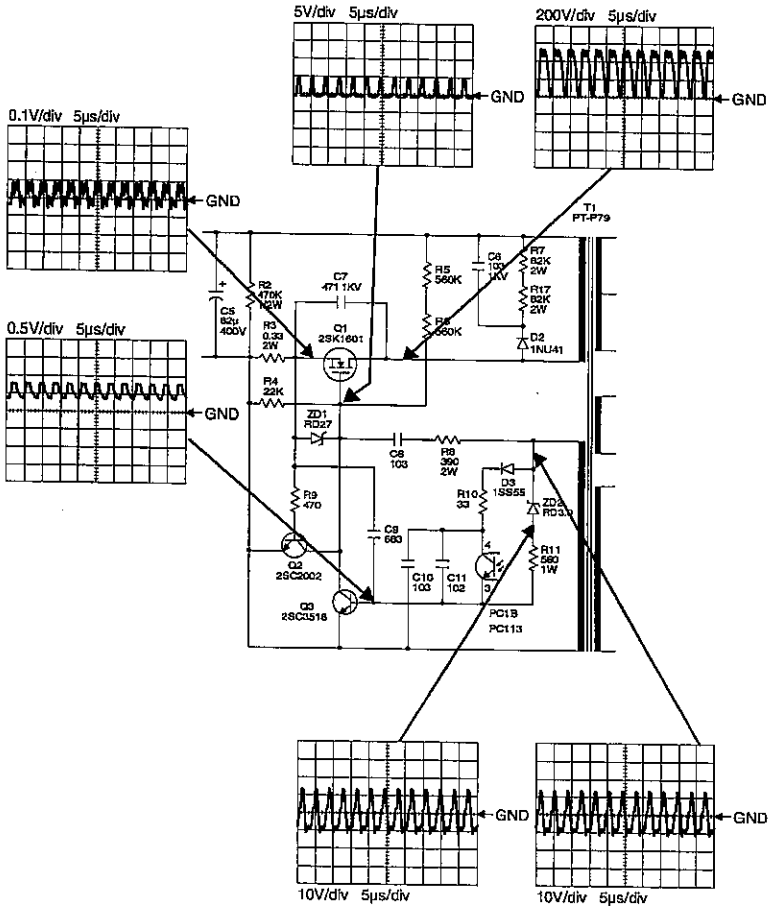
When AC power is supplied, a rush current flowing through capacitor C5 may blow fuse F1/F2 and damage the circuit. To prevent this, the power thermistor TH1 is provided to limit the rush current.

### 3.7. Line filter

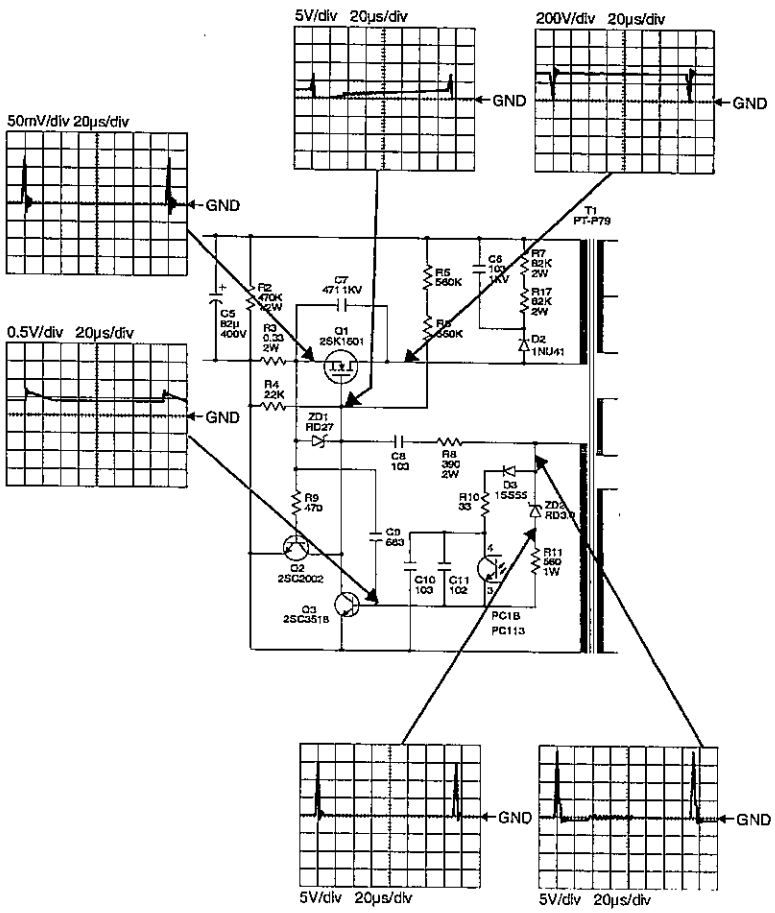
To protect against external noises and noises generated in the power circuit, the line filter is composed of L1, L2, C1, C2, C3, and C4 to reduce noises.

(Waveform)

- At standby

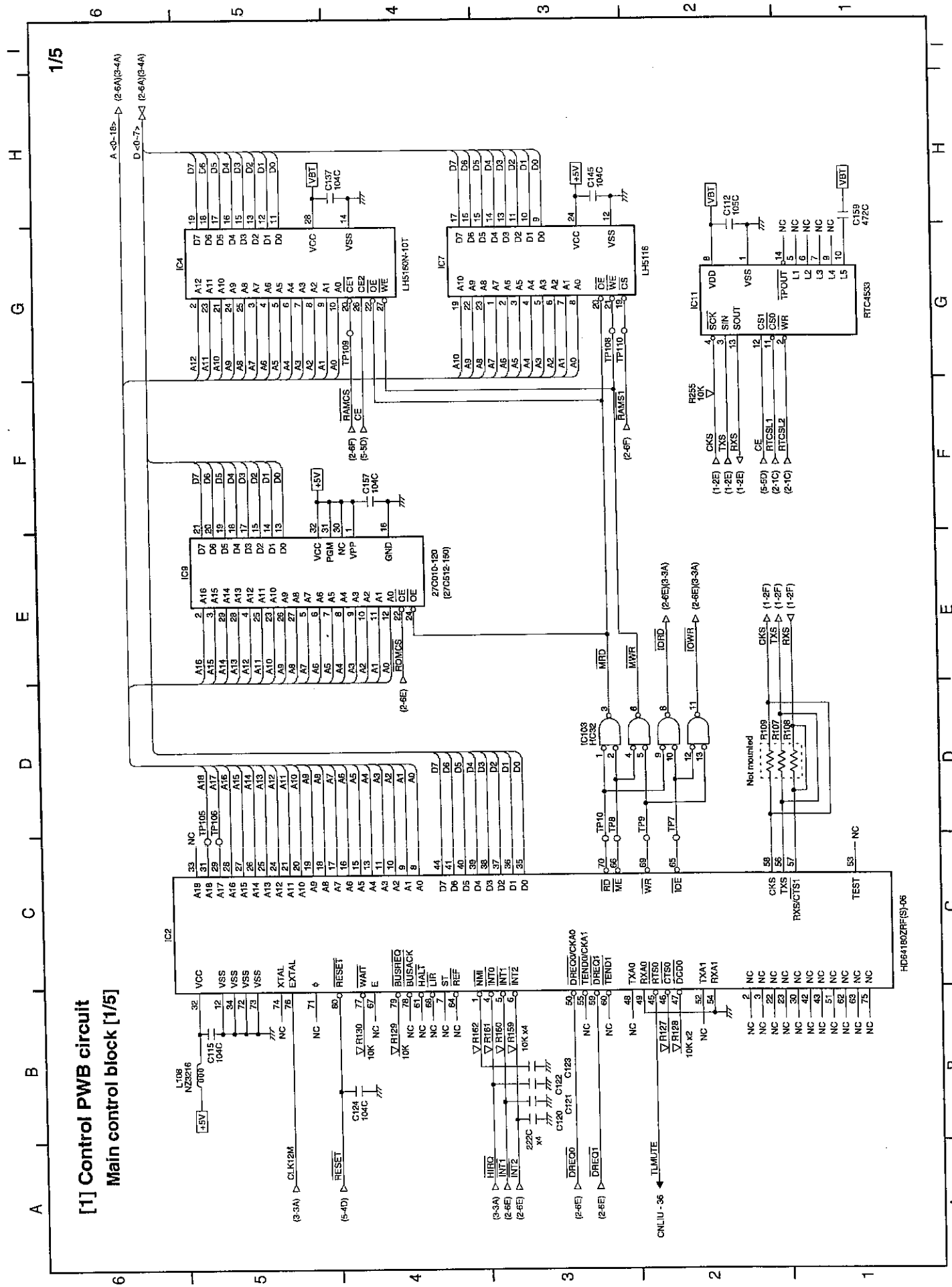


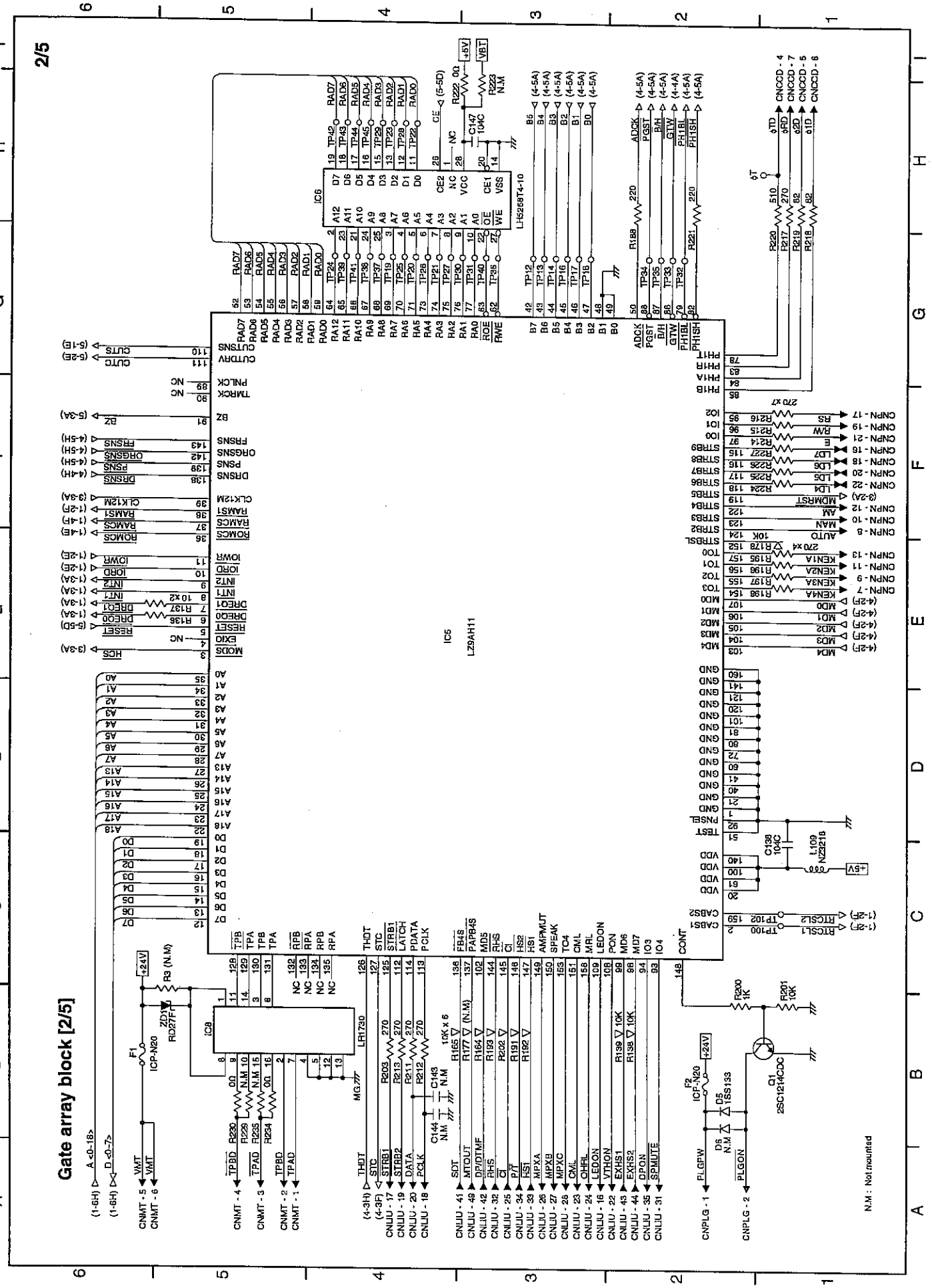

- When the overcurrent protection circuit works

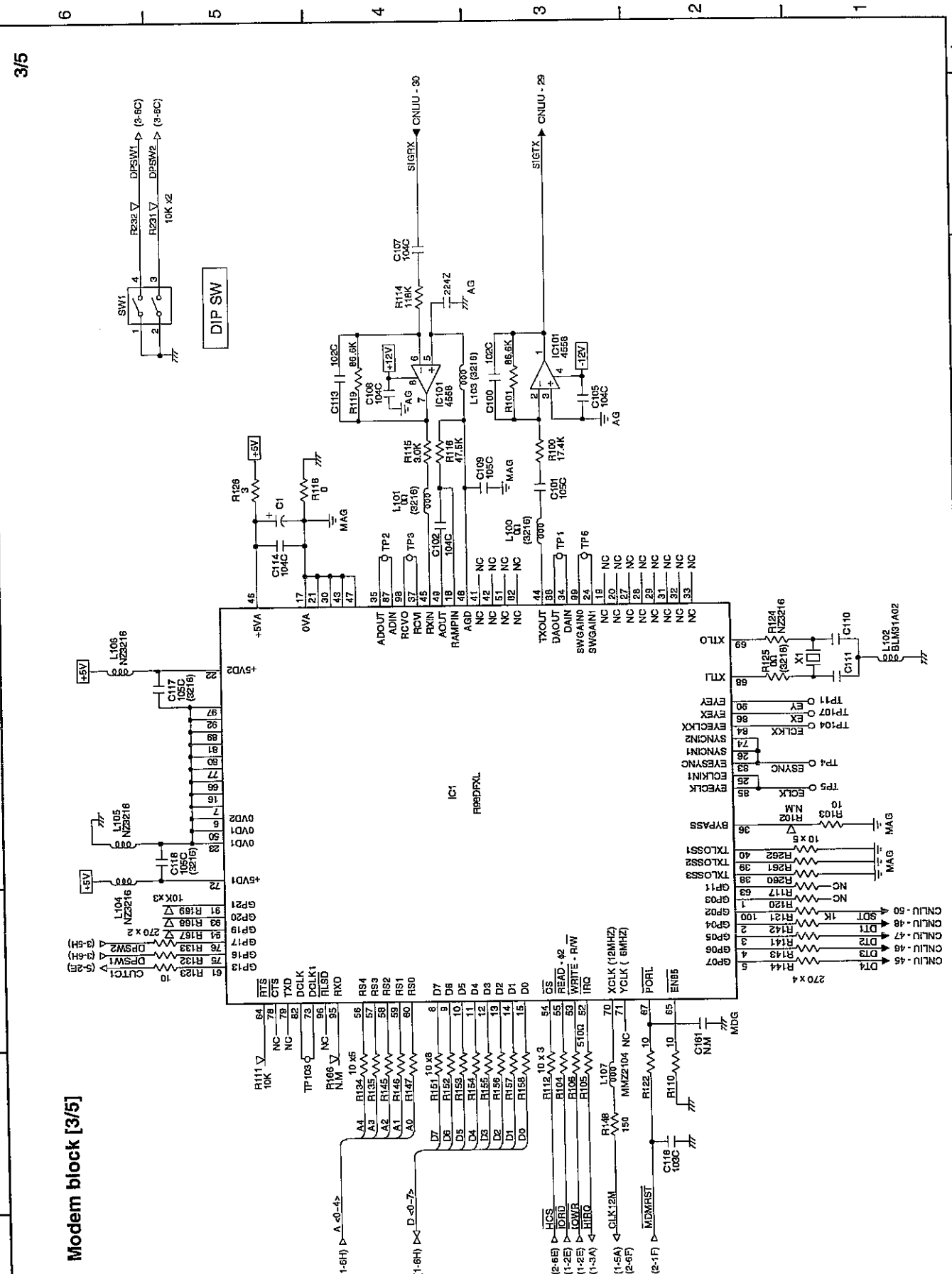


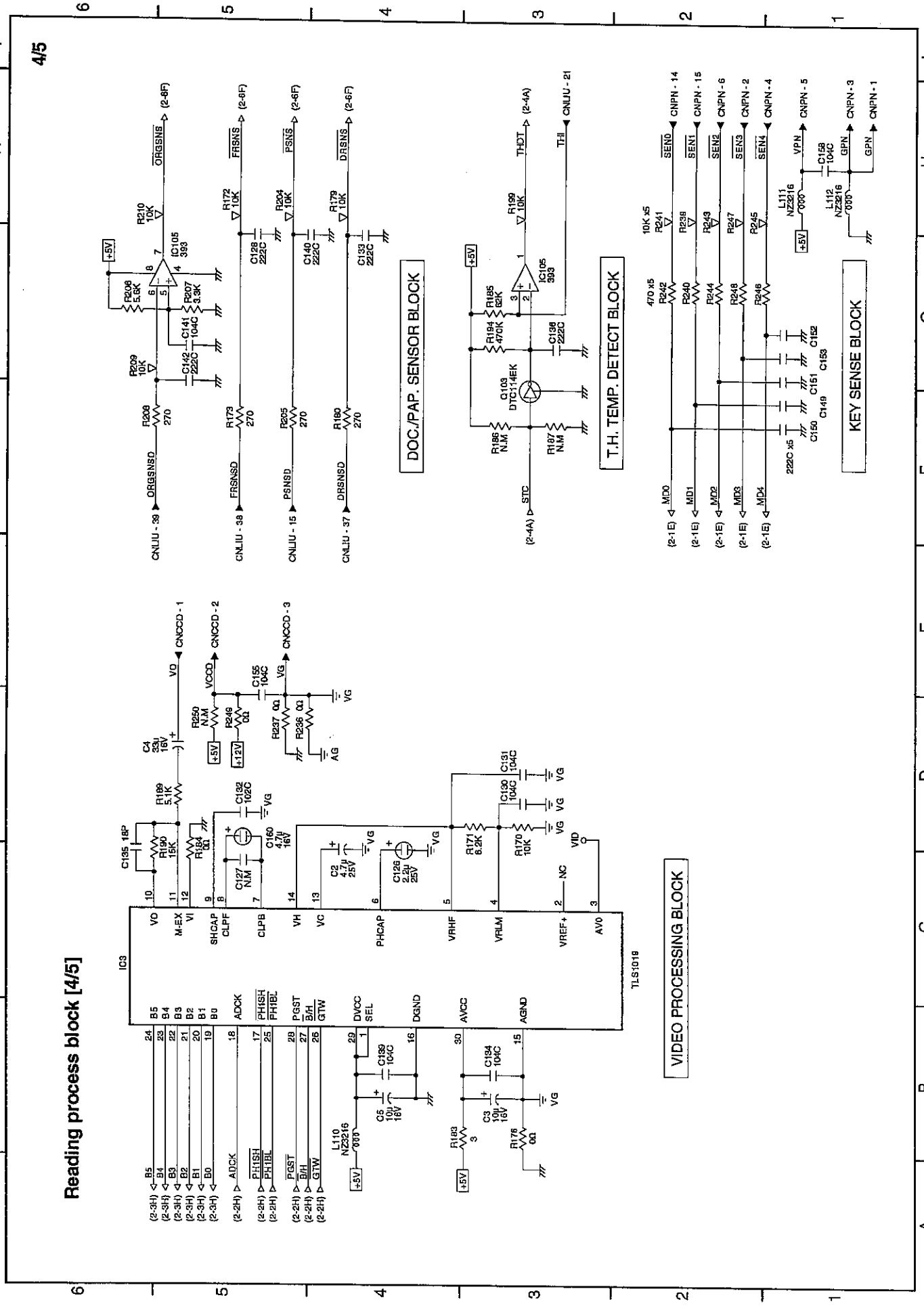
# CHAPTER 6. CIRCUIT SCHEMATICS AND PARTS LAYOUT

## [1] Control PWB circuit
### Main control block [1/5]

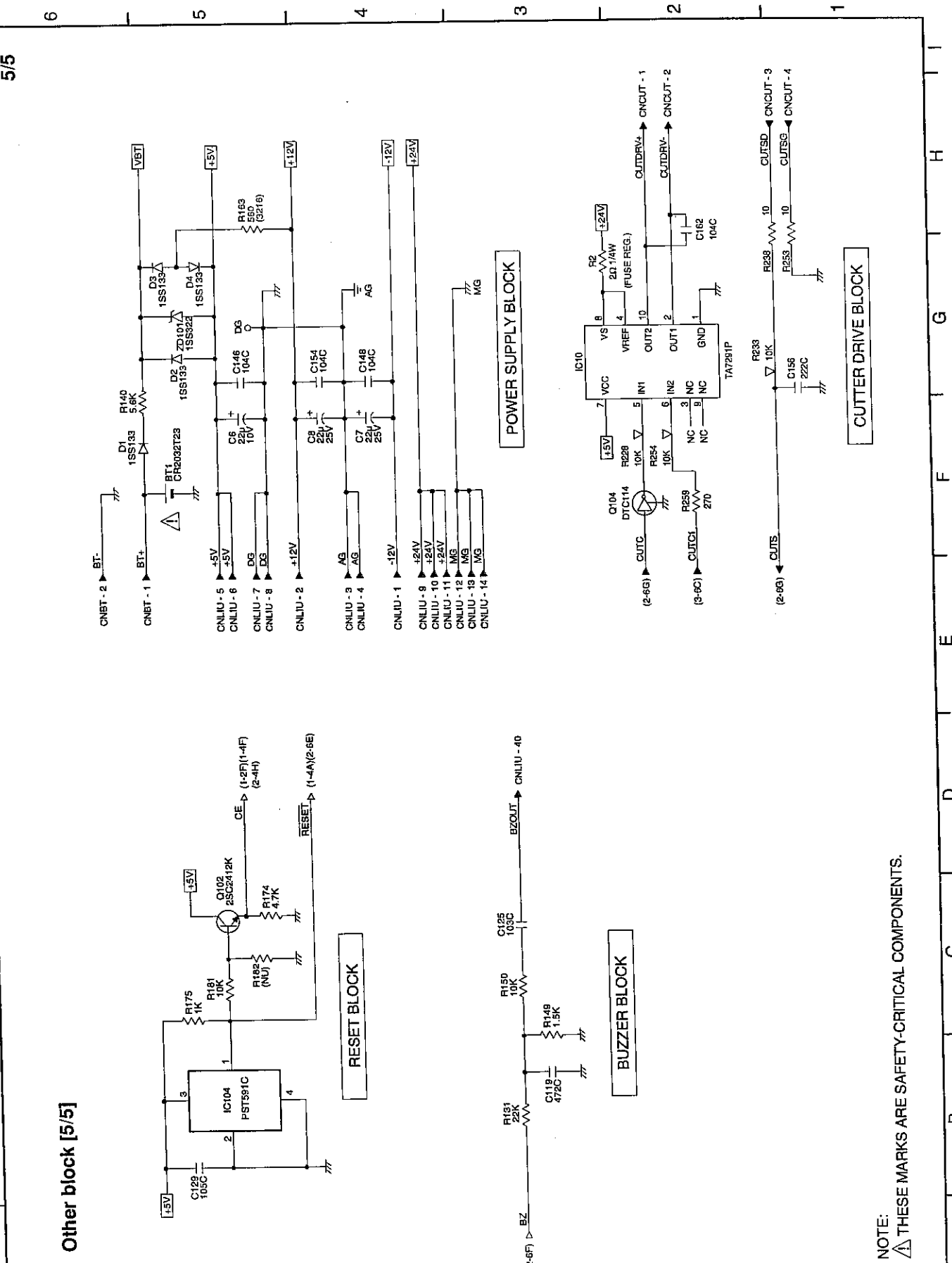



2/5
Gate array block [2/5]
IC5
LZ9AH11
IC6
LH5268T4-10
IC8
LA1730
N.M : Not mounted


3/5
DIP SW
SW1
R232
R231
10K x2
DPSW1
DPSW2
(3-6C)
SIGTX
CNUU - 30
CNUU - 29
IC101
4558
IC1
R96DFXL
+5VA
0VA
+5VD2
0VD2
0VD1
+5VD1
ADOUT
ADIN
RCVO
RCVI
RXIN
AOUT
RAMPIN
AGD
TXOUT
DAOUT
DAIN
SWGAIN0
SWGAIN1
XTLO
XTLI
EYEY
EYEX
EYECLKX
SYNCIN2
SYNCIN1
EYESYNC
ECLKIN1
EYECLK
BYPASS
TXLOSS1
TXLOSS2
TXLOSS3
GP11
GP03
GP02
GP04
GP05
GP06
GP07
GP17
GP18
GP19
GP20
GP21
GP13
GP14
GP15
GP16
RTS
CTS
TXD
DCLK
DCLK1
RLSD
RXD
RS4
RS3
RS2
RS1
RS0
D7
D6
D5
D4
D3
D2
D1
D0
CS
READ - /2
WRITE - R/W
IRQ
XCLK (12MHZ)
YCLK ( 6MHZ)
PDRL
ENBS
CNLU - 50
CNLU - 48
CNLU - 47
CNLU - 46
CNLU - 45
SDT
DT1
DT2
DT3
DT4
TP11
TP107
TP104
TP4
TP5
TP103
TP2
TP3
TP1
TP6
L106
L105
L104
L101
L100
L102
X1
L103 (3216)
L107
MM2Z104
C107 104C
C108 104C
C109 105C
C110
C111
C112
C113 102C
C114 104C
C117 105C (3216)
C118 105C (3216)
C100 102C
C101 105C
C102 104C
C105 104C
C116 103C
C161 NJM
R114 118K
R115 9.0K
R116 47.5K
R119 86.6K
R101 86.6K
R100 17.4K
R129 3
R118 0
R124 NZ2216
R125 0Ω (3216)
R111 10K
R166 NJM
R134
R135
R145
R146
R147
R161
R152
R153
R154
R155
R156
R157
R158
R112
R104
R105
R148 150
R122
R110
R102
R103
R260
R261
R262
R117
R120
R121
R142
R141
R143
R144
R123
R132
R133
R167
R168
R169
10K x3
10 x5
10 x8
10 x3
270 x4
270 x 2
10 x 5
CLK12M
MDMRST
MAG
AG
MDG
-12V
+12V
+5V
Modem block [3/5]

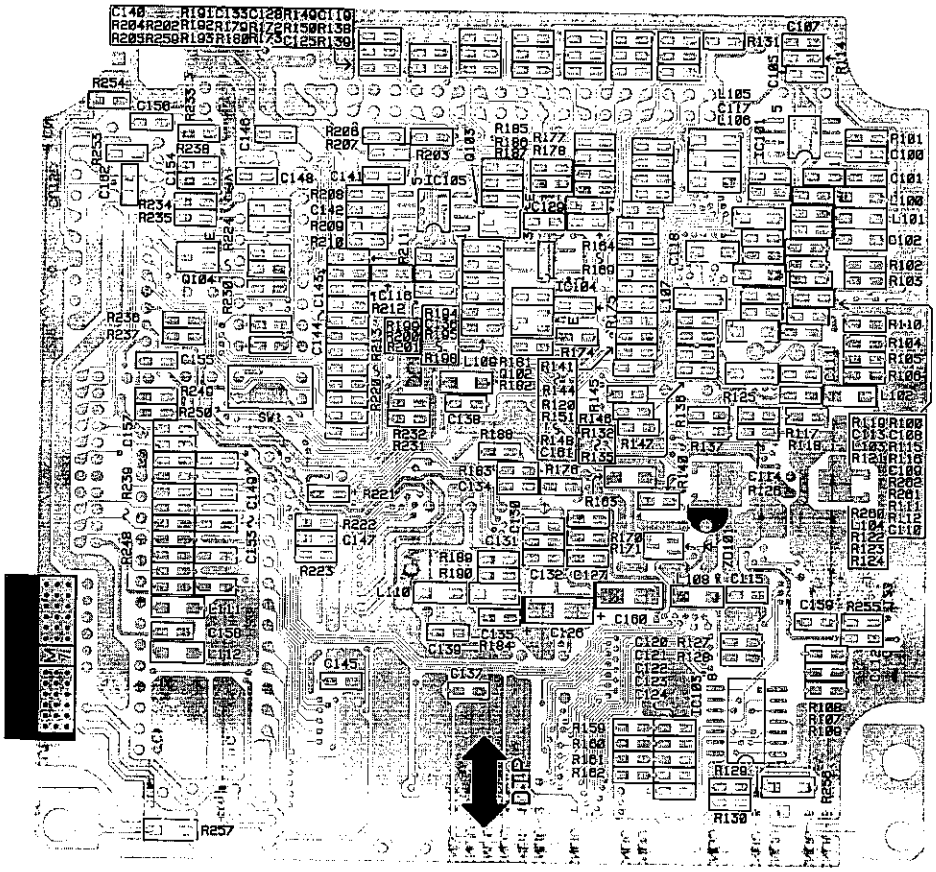

4/5
Reading process block [4/5]
IC3
TLS1018
VIDEO PROCESSING BLOCK
DOC./PAP. SENSOR BLOCK
T.H. TEMP. DETECT BLOCK
KEY SENSE BLOCK
CNLIU - 39
CNLIU - 38
CNLIU - 15
CNLIU - 37
CNLIU - 21
CNCCD - 1
CNCCD - 2
CNCCD - 3
CNPN - 14
CNPN - 15
CNPN - 6
CNPN - 2
CNPN - 4
CNPN - 5
CNPN - 3
CNPN - 1
+5V
+12V
VG
AG

## Other block [5/5]

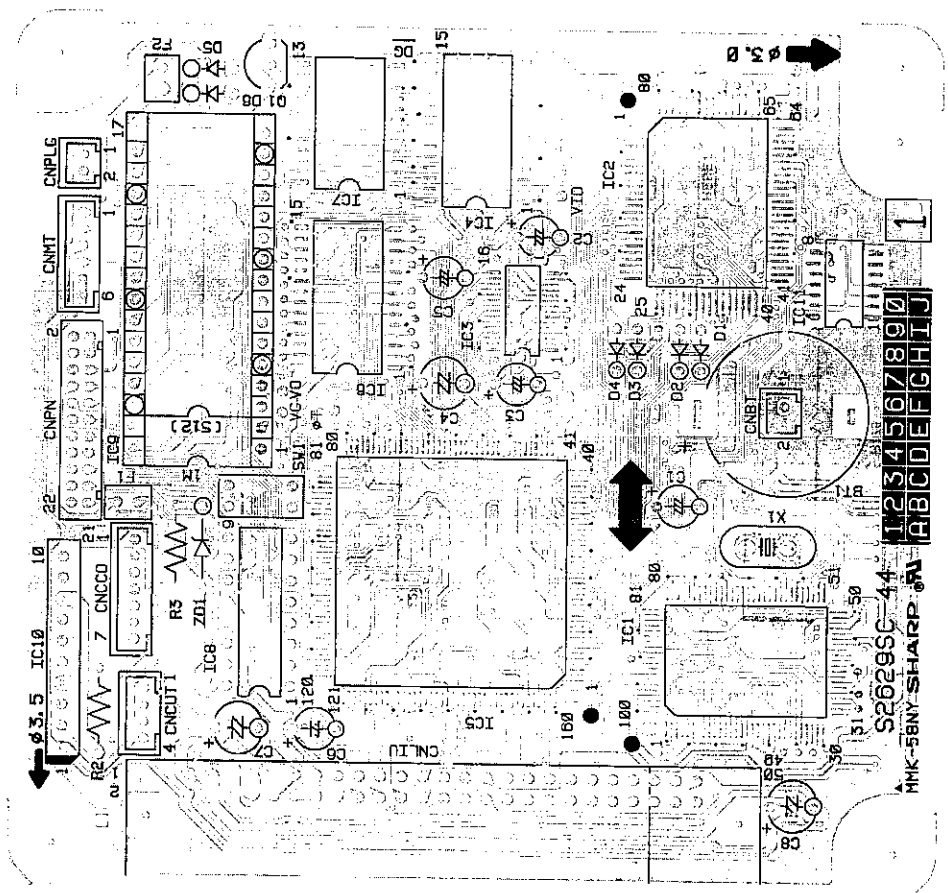



NOTE:
⚠ THESE MARKS ARE SAFETY-CRITICAL COMPONENTS.

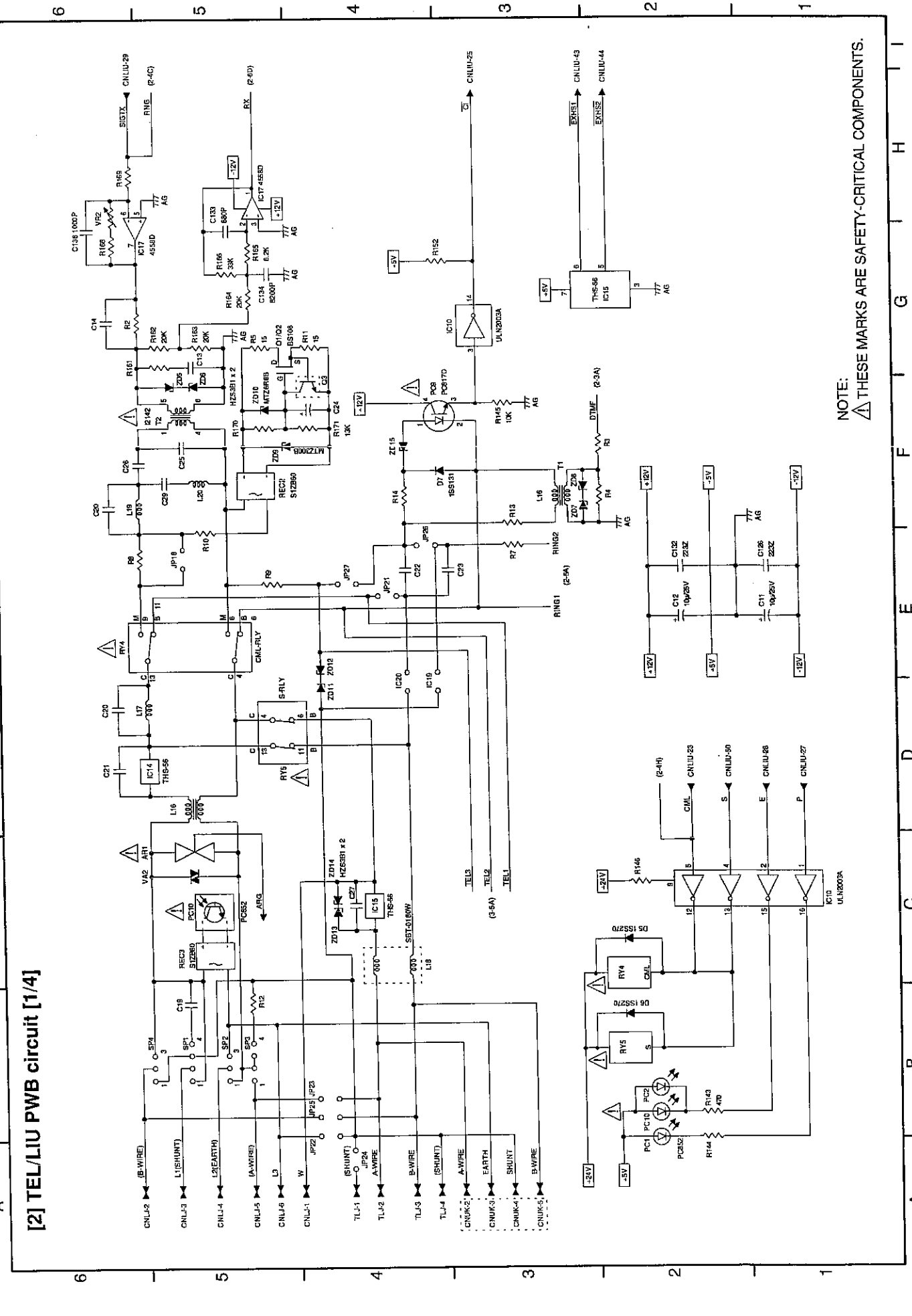
Control PWB parts layout (Bottom side)



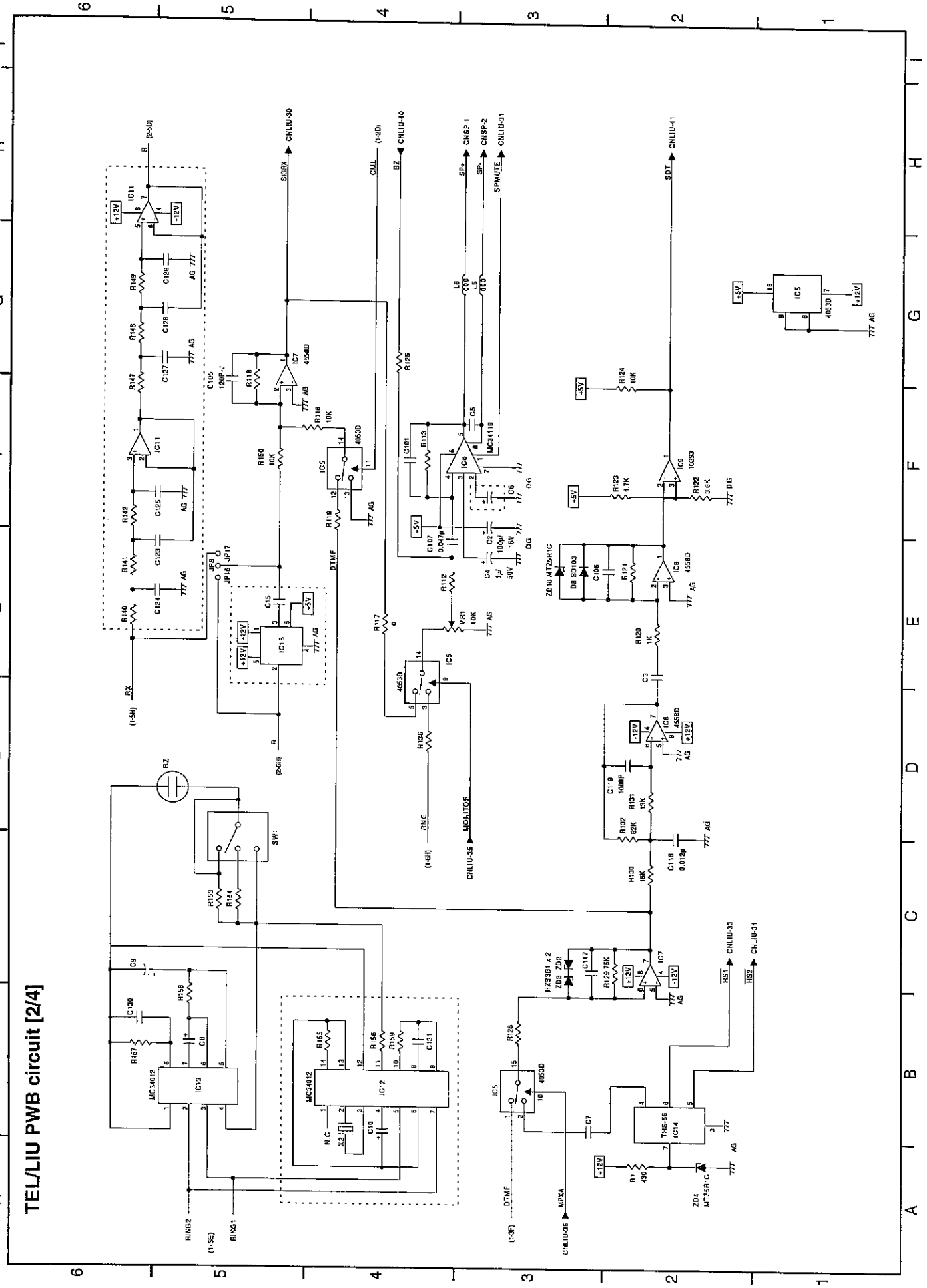
Control PWB parts layout (Front side)

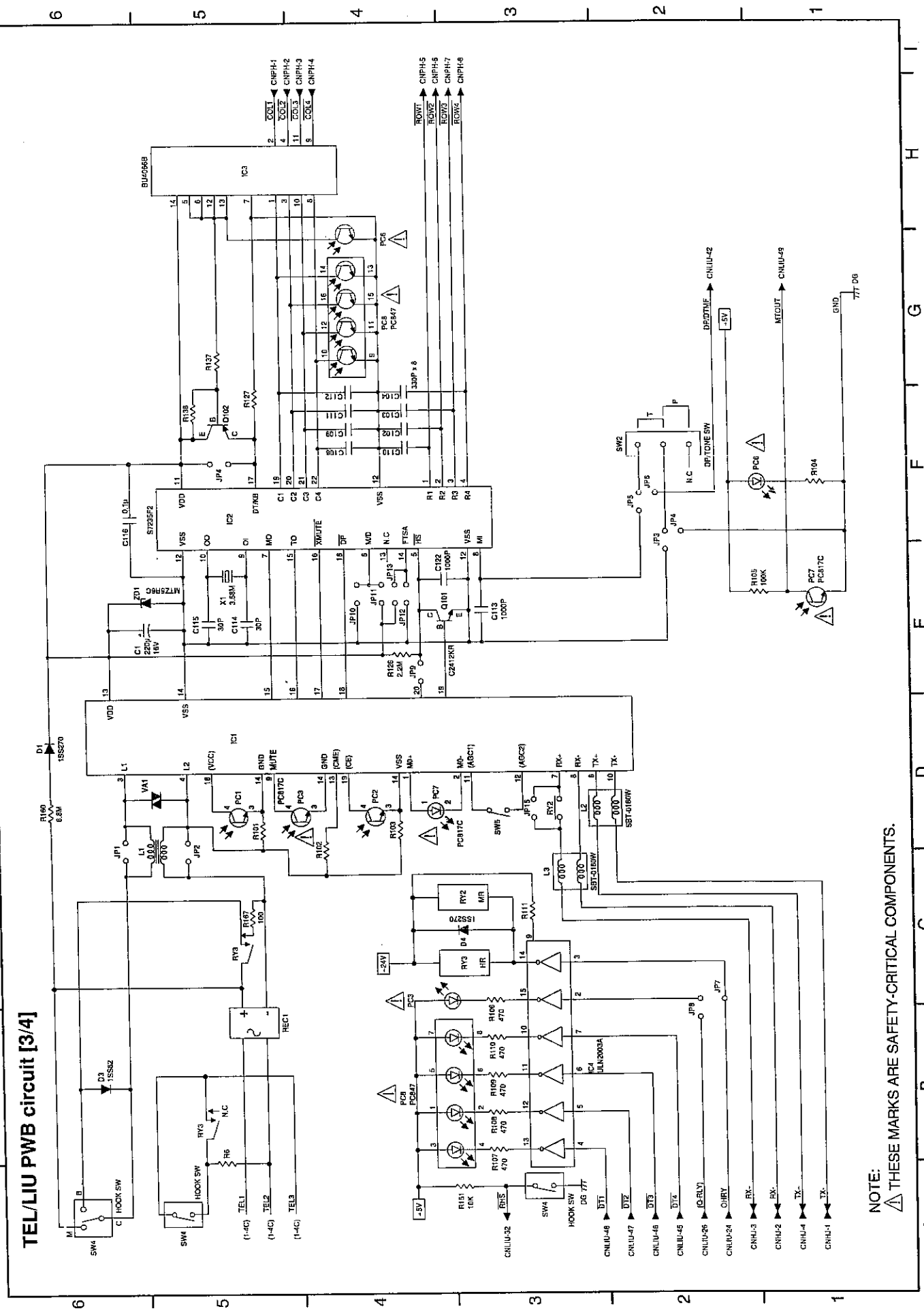


## [2] TEL/LIU PWB circuit [1/4]

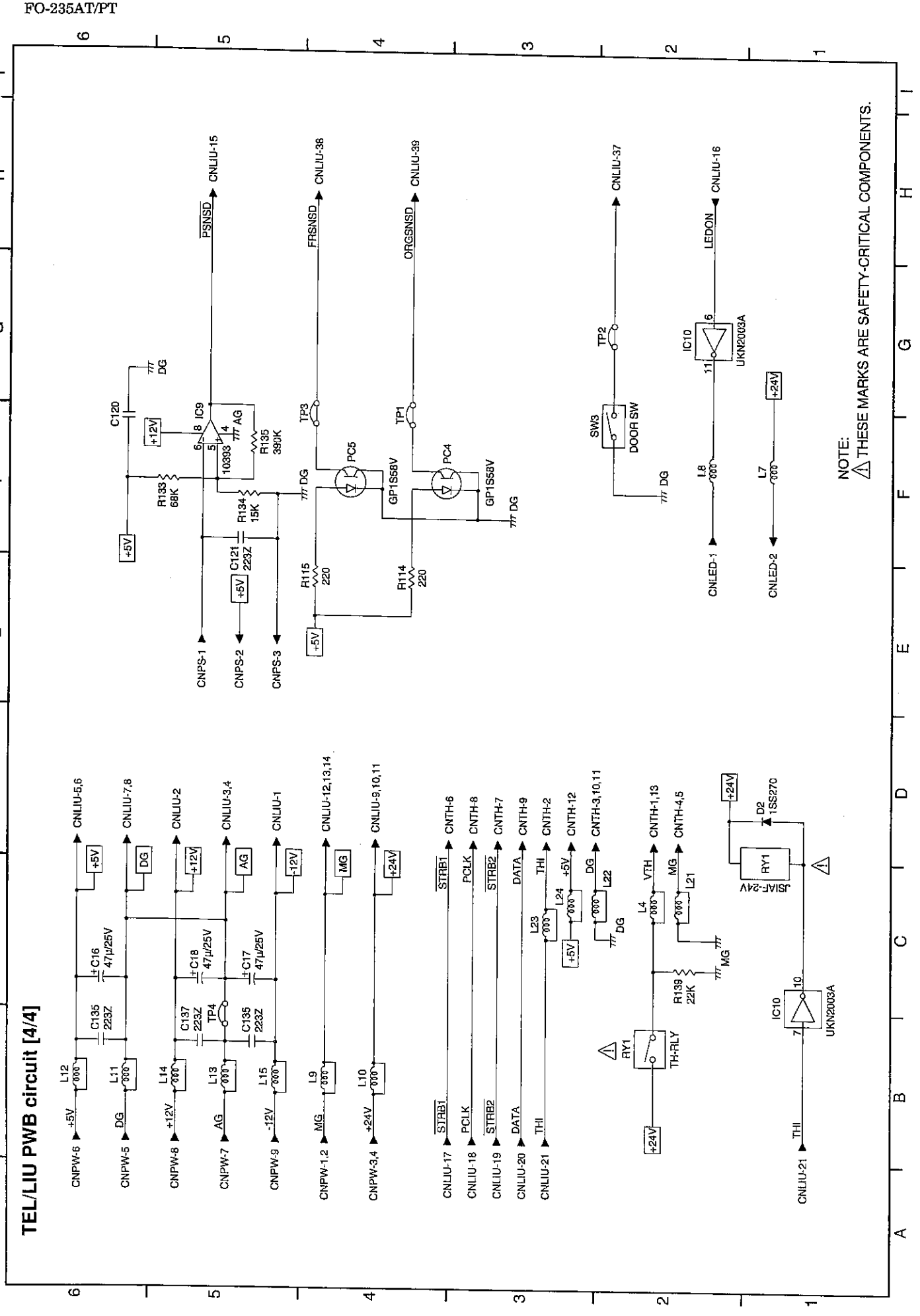


## TEL/LIU PWB circuit [2/4]

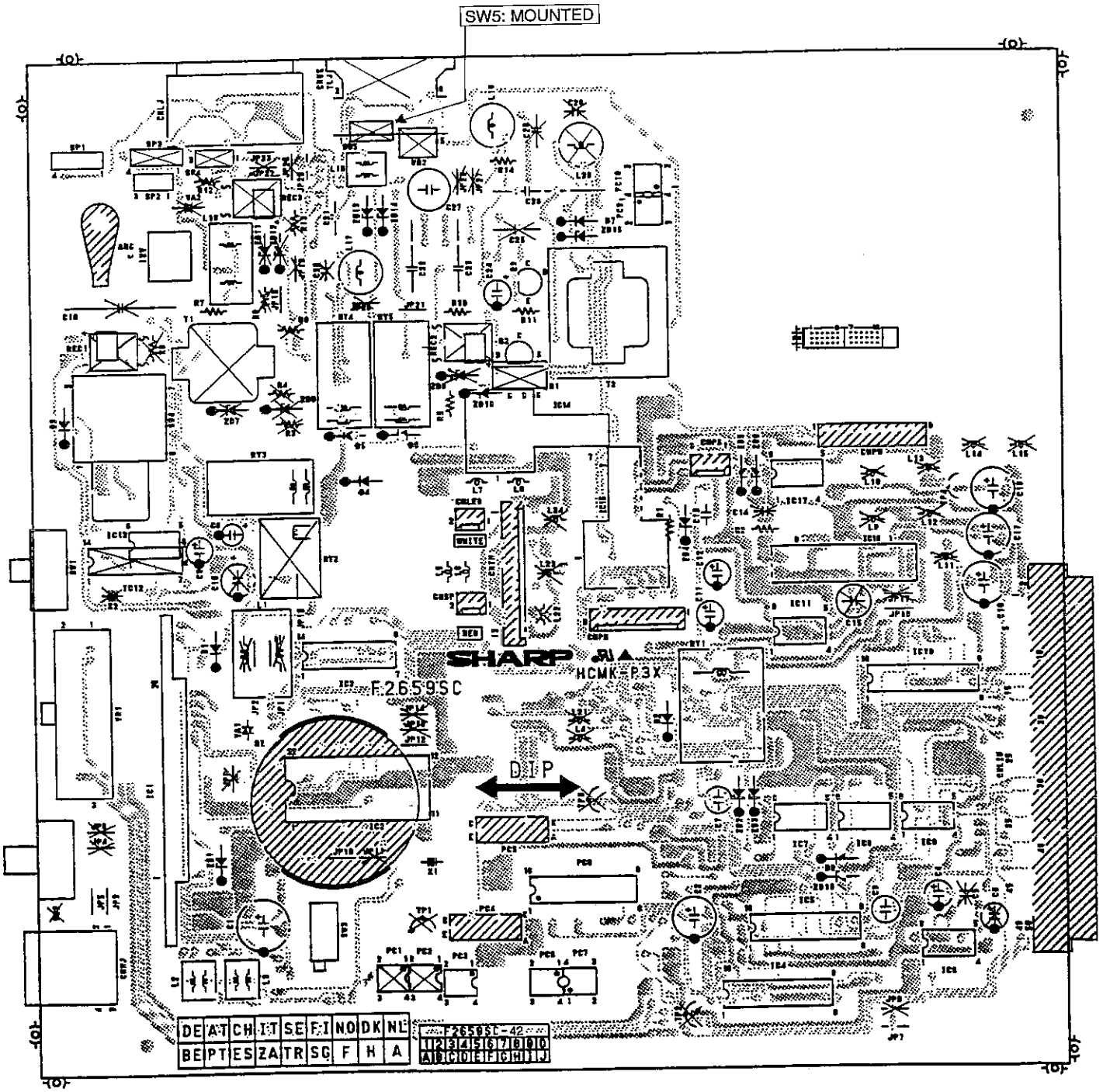



TEL/LIU PWB circuit [3/4]
NOTE:
⚠ THESE MARKS ARE SAFETY-CRITICAL COMPONENTS.

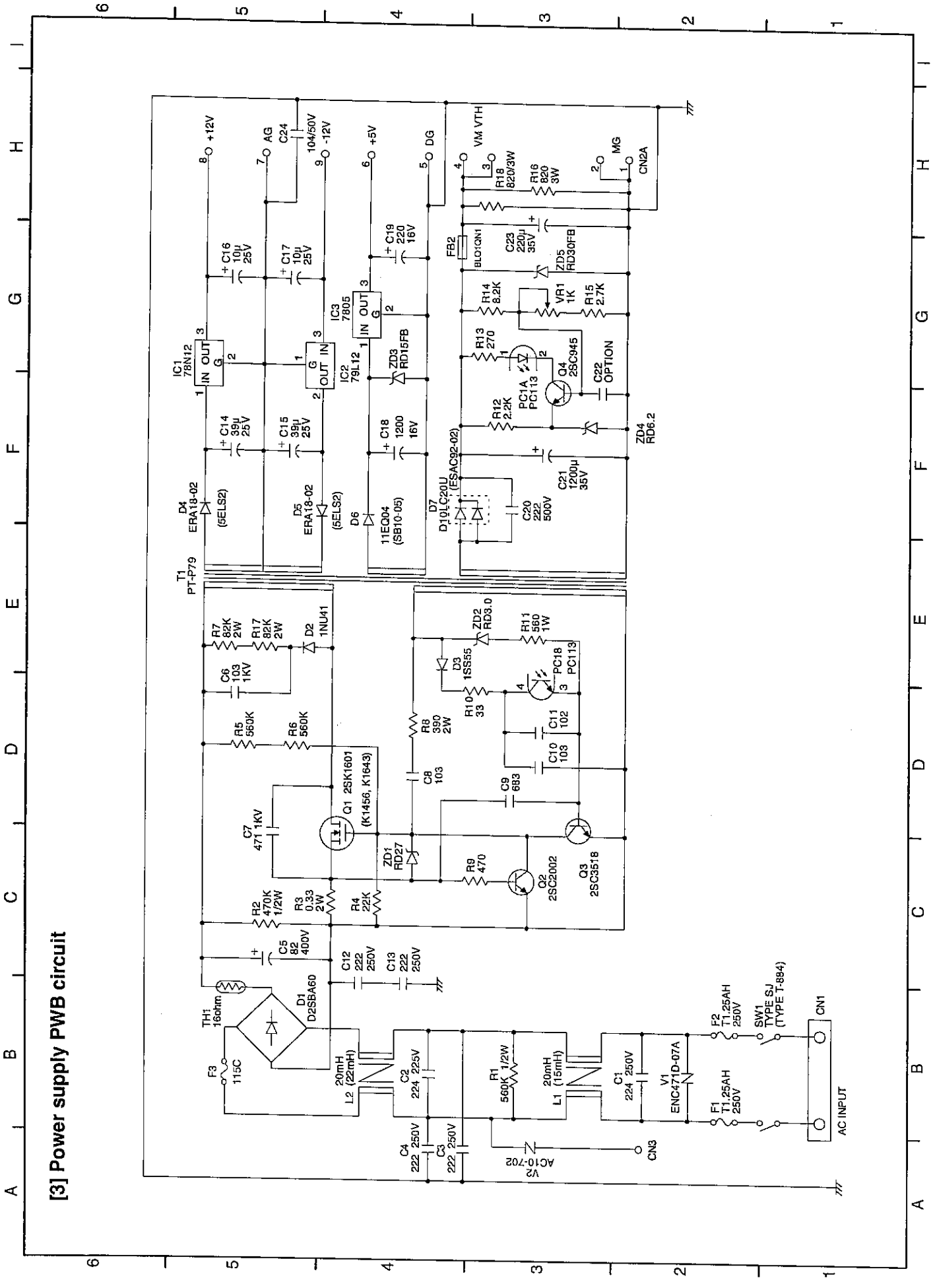
## TEL/LIU PWB circuit [4/4]



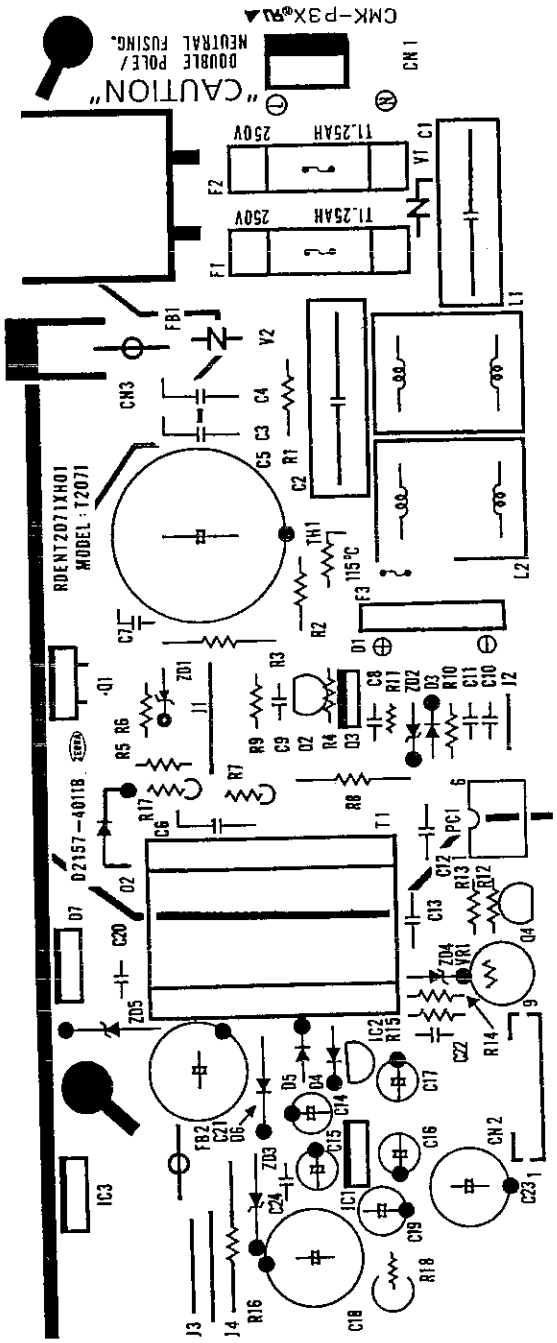
# TEL/LIU PWB parts layout



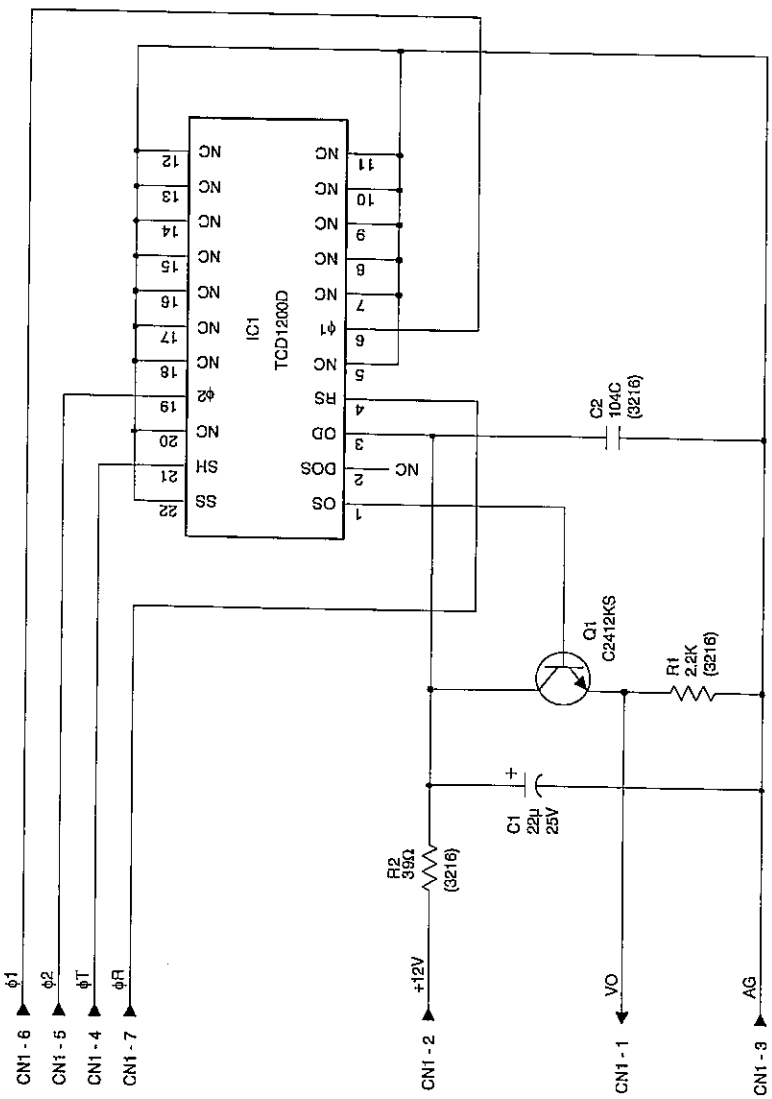
## [3] Power supply PWB circuit



## Power supply PWB parts layout

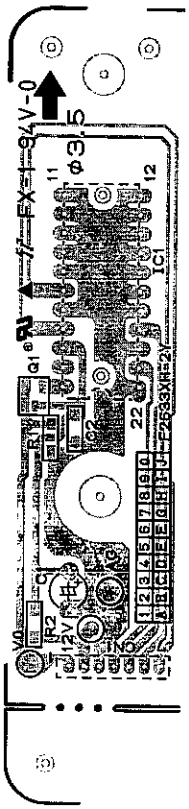


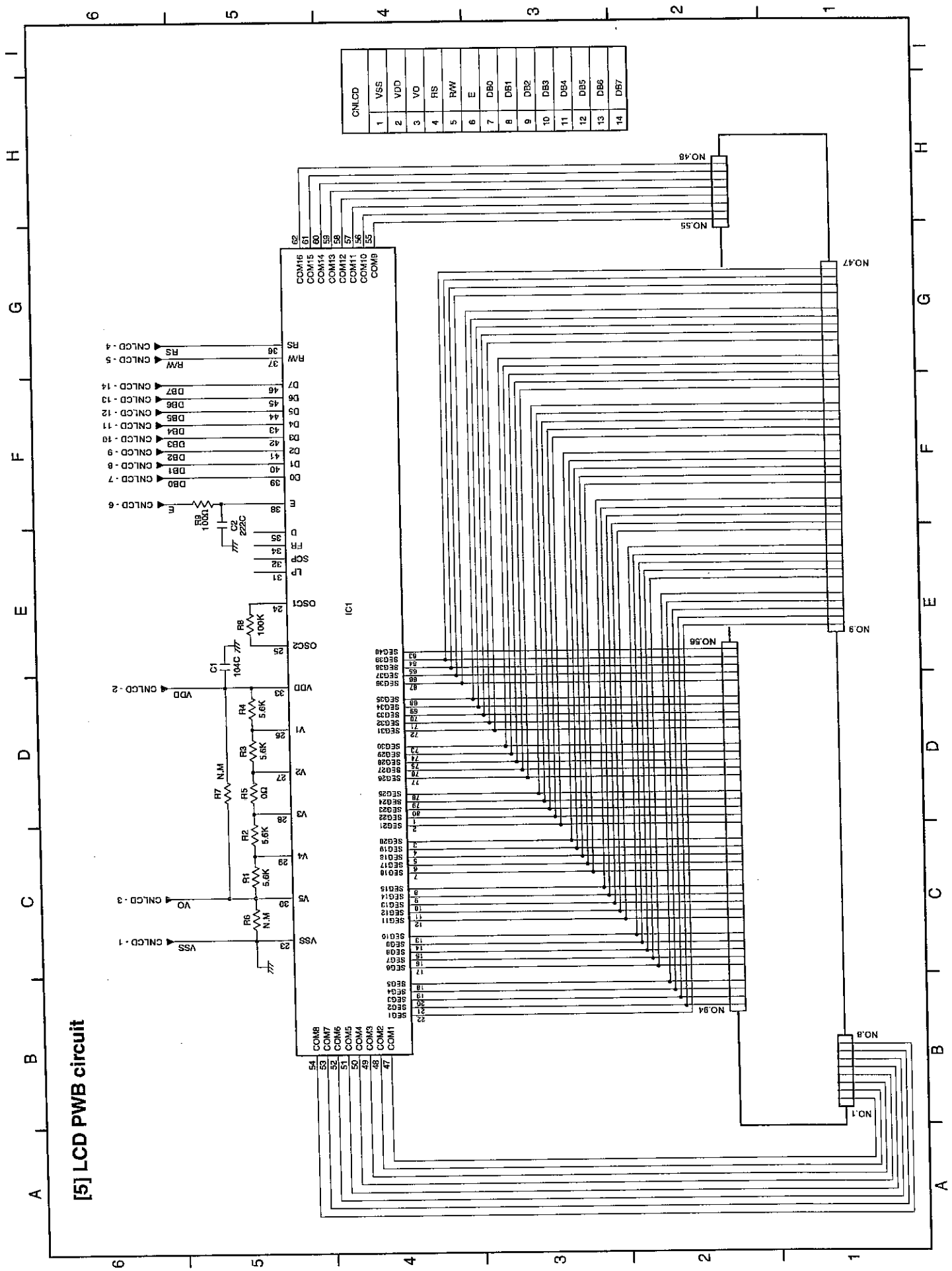
## [4] CCD PWB




| CN1 | |
|---|---|
| 1 | VO |
| 2 | +12V |
| 3 | AG |
| 4 | φT |
| 5 | φ2 |
| 6 | φ1 |
| 7 | φR |

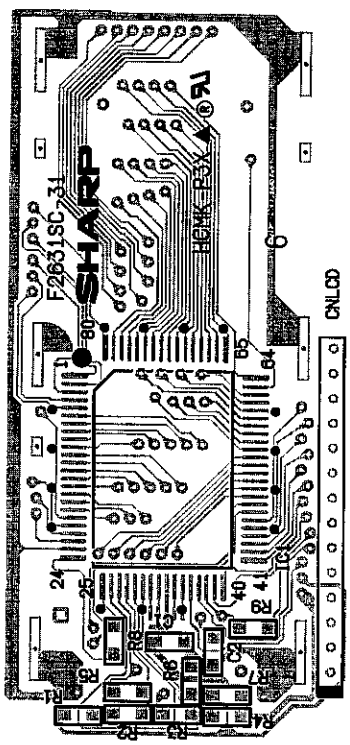
## CCD PWB parts layout

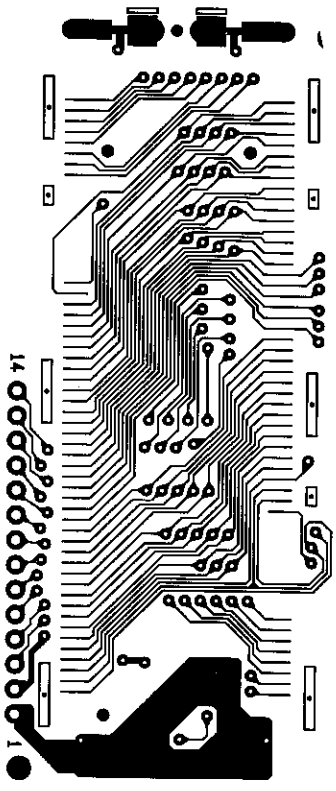





## [5] LCD PWB circuit

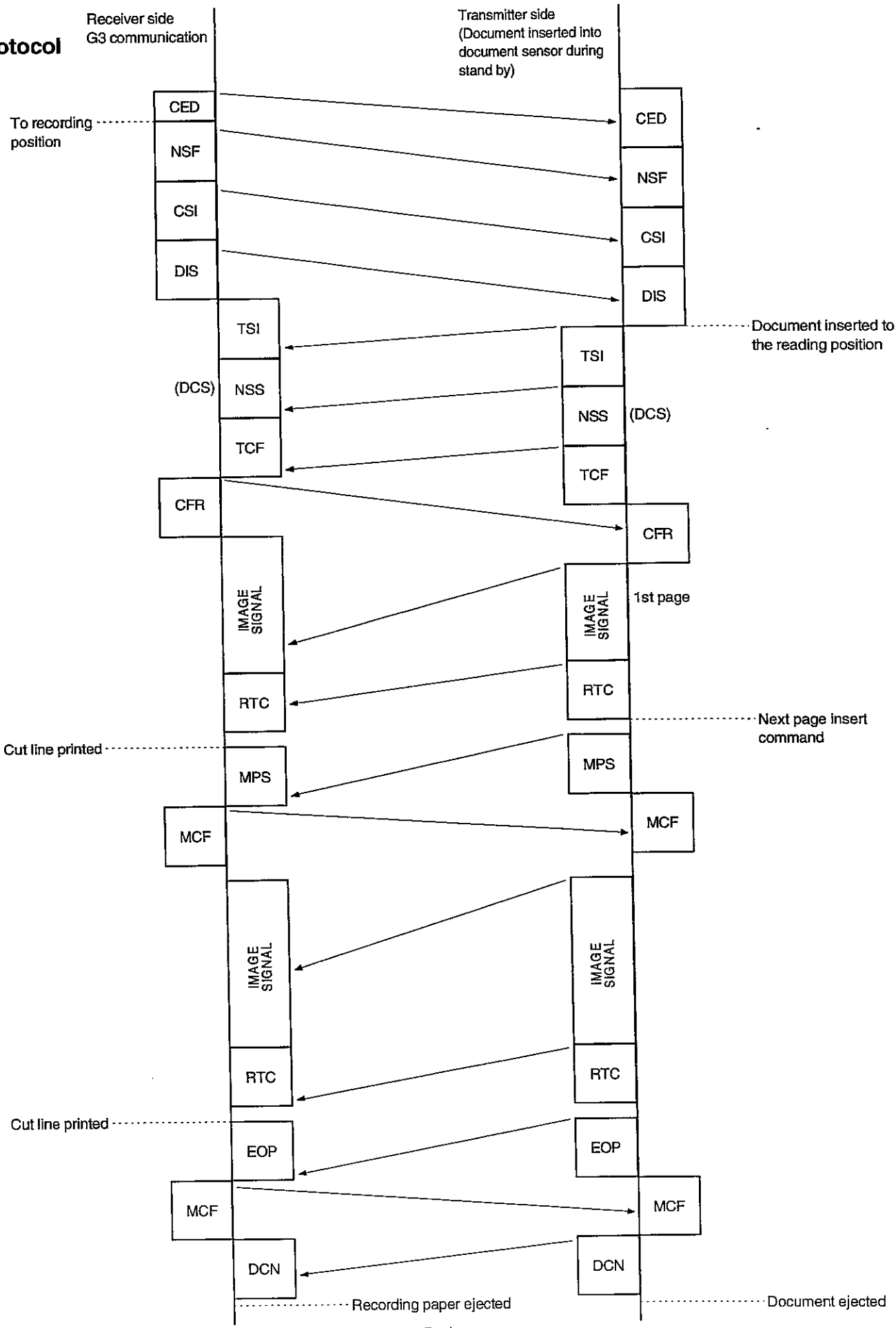
## LCD PWB parts layout



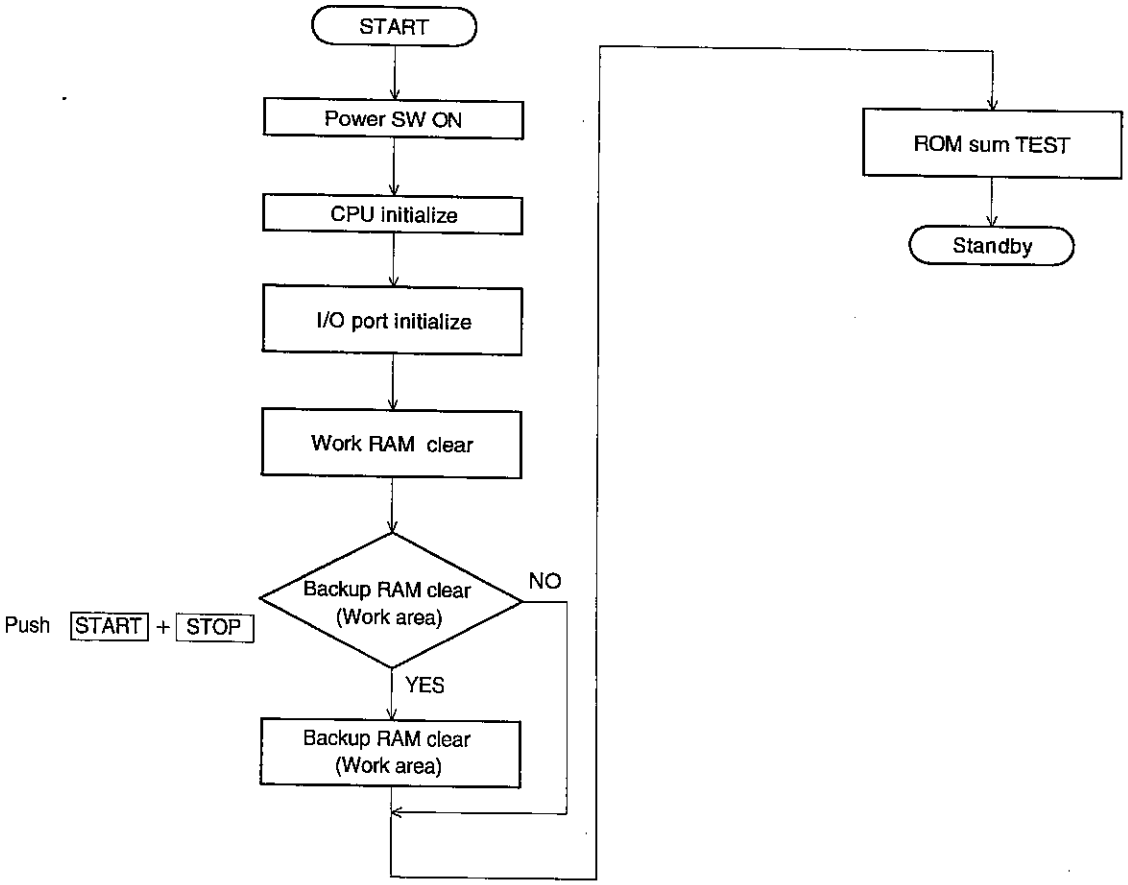



# CHAPTER 7. OPERATION FLOWCHART

## [1] Protocol



## [2] Power on squence



# CHAPTER 8. OTHERS

## [1] Service tools

### 1. List

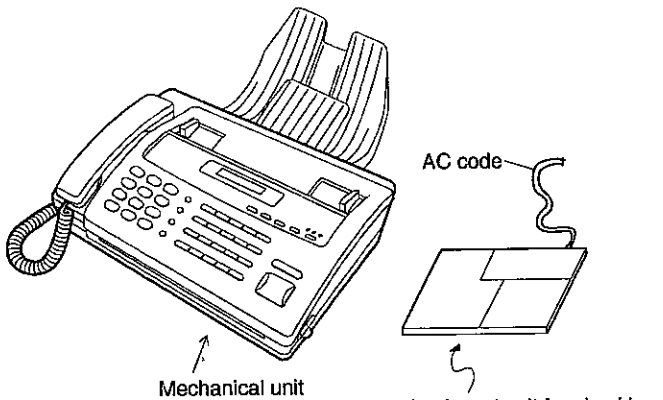
| NO. | PARTS CODE | DESCRIPTION | Q'TY | PRICE RANK |
|---|---|---|---|---|
| 1 | CPWBS2635SC02 | Extension board unit | 1 | BZ |
| 2 | UKOGM2026SCZZ | Optical adjustment plate | 1 | BP |

### 2. Description

#### 2-1. Extension board unit

CNSNS cable connection

| Cable color | | Connected to (LIU PWB) |
|---|---|---|
| 1. Black | $\overline{\text{PSNS}}$ | TP5 |
| 2. Brown | $\overline{\text{ORGSNS}}$ | TP2 |
| 3. Red | $\overline{\text{FRSNS}}$ | TP3 |
| 4. Orange | $\overline{\text{DRSNS}}$ | TP1 |
| 5. Yellow | RHS 1 | PC3 (4pin) |
| 6. Green | RHS 3 | PC3 (3pin) |
| 7. Blue | RH2 6 | TP4 |




The recording paper sensor ($\overline{\text{PSNS}}$), the original sensor ($\overline{\text{ORGSNS}}$), the front sensor ($\overline{\text{FRSNS}}$), the door sensor ($\overline{\text{DRSNS}}$), and the hook switch are operated by OR of the mechanical unit switch and the test PWB switch. When performing installation in the machine unit, set the test PWB switches to the fixed position.

| | Mechanical unit | PWB to be tested |
|---|---|---|
| | Actual operation with mechanical unit | |
| Recording paper sensor | ON/OFF operation | OFF (Photo interrupter is interrupted.) |
| Original sensor | ON/OFF operation | OFF (Photo interrupter is interrupted.) |
| Front sensor | ON/OFF operation | OFF (Photo interrupter is interrupted.) |
| Door SW | ON/OFF operation | OFF |
| Hook SW | ON/OFF operation | ON |
| | PWB sensor check | |
| Recording paper sensor | OFF | ON/OFF operation |
| Original sensor | OFF | ON/OFF operation |
| Front sensor | OFF | ON/OFF operation |
| Door SW | OFF | ON/OFF operation |
| Hook SW | ON | ON/OFF operation |

| NO. | PARTS CODE | DESCRIPTION | Q'TY | PRICE RANK |
|---|---|---|---|---|
| 1 | QCNW-3866SCZZ | CABLE (CNPN2) | 1 | AS |
| 2 | QCNW-3867SCZZ | CABLE (CNPL2) | 1 | AE |
| 3 | QCNW-3868SCZZ | CABLE (CNLED2) | 1 | AE |
| 4 | QCNW-3869SCZZ | CABLE (CNSP2) | 1 | AE |
| 5 | QCNW-3870SCZZ | CABLE (CNMT2) | 1 | AH |
| 6 | QCNW-4112SCZZ | CABLE (CNCCD2) | 1 | AG |
| 7 | QCNW-3872SCZZ | CABLE (CNTH2) | 1 | AP |
| 8 | QCNW-3873SCZZ | CABLE (CNSNS) | 1 | AZ |
| 9 | QCNW-3874SCZZ | CABLE (CNCUT2) | 1 | AG |
| 10 | QCNW-3882SCZZ | CABLE (CNPS2) | 1 | AF |
| 11 | QCNCM2389SC2B | CONNECTOR 22pin (CNPN1, CNPN2) | 2 | AE |
| 12 | QCNCM2401SC0B | CONNECTOR 2pin (CNSP1, CNSP2) | 2 | AA |
| 13 | QCNCM7014SC0B | CONNECTOR 2pin (CNLED1, CNLED2 CNPL1, CNPL2) | 4 | AD |
| 14 | QCNCM7014SC0C | CONNECTOR 3pin (CNPS1, CNPS2) | 2 | AA |
| 15 | QCNCM7014SC0D | CONNECTOR 4pin (CNCUT1, CNCUT2) | 2 | AB |
| 16 | QCNCM7014SC0F | CONNECTOR 6pin (CNMT1, CNMT2) | 2 | AB |
| 17 | QCNCM7014SC0G | CONNECTOR 7pin (CNSNS) | 1 | AB |
| 18 | QCNCM7014SC0G | CONNECTOR 7pin (CNCCD1, CNCCD2) | 2 | AB |
| 19 | QCNCM7014SC1C | CONNECTOR 13pin (CNTH1, CNTH2) | 2 | AC |
| 20 | QPWBS2635SCZZ | EXTENSION BOARD (WITHOUT PARTS) | 1 | BV |
| 21 | QSW-M2184SCZZ | Cover switch (DRSN) | 1 | AD |
| 22 | QSW-Z2182SCZZ | Hook switch (RHS) | 1 | AE |
| 23 | VHGP1S58V//-1 | (PSNS, FRSNS, ORGSNS) | 3 | AE |
| 24 | VRD-RC2EY221J | RESISTOR (1/4W 220Ω ±5%) (R1, R2, R3) | 3 | AA |
| 25 | XHBSD30P05000 | Screw | 3 | AA |
| 26 | PSHEZ2881XHZZ | Sheet | 1 | AV |
| 27 | LPLTM2653XHZB | Bottom plate | 1 | AT |
| 28 | QCNCM2401SC0H | Connector 8 pin (CNPH2, CNPH3) | 2 | AC |
| 29 | QCNW-4181SCZZ | Cable (CNPH2) | 1 | AK |

## 2-2. Scan optical system adjustment

### (1) Outline

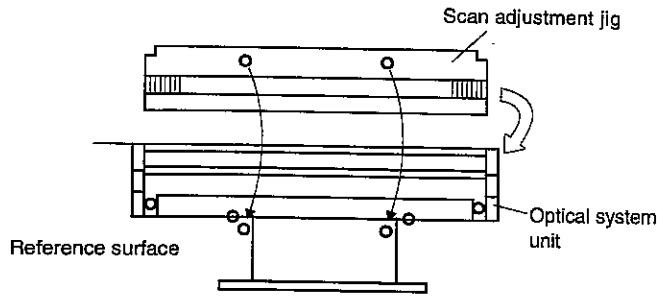
The adjustment procedures of the scan optical system are described below:

### (2) Adjustment procedures

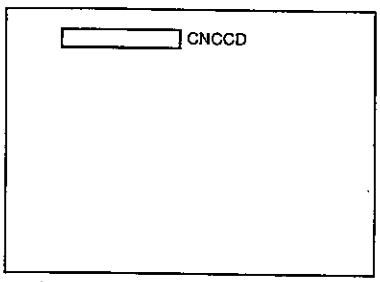
① Fully open the upper cabinet, remove fixing screws of the recording paper tray, and remove the recording paper tray.
In order to perform focus adjustment, remove the optical system unit from the frame.

② Install the scan adjustment jig to the optical system unit so that the pattern surface is in the lower side.

③ Fit the pin of the optical system adjustment jig with the hole in the optical system frame.



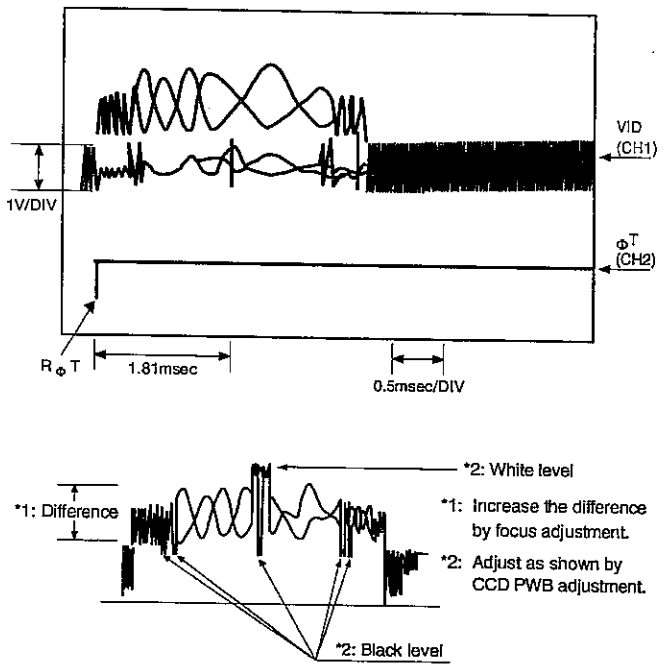

④ Use an oscilloscope to connect the control PWB VID (1 channel side), ϕT (2 channel side), and AG (GND).




VID CNCCD-1
ΦT CNCCD-4
AG CNCCD-3

⑤ Supply power to the main body to light the LED in the LED array lighting mode Loosen the two red screws of the CCD to obtain VID signal waveform in synchronization with ϕT signal and adjust the CCD position so that the following waveform is obtained.

CCD waveform

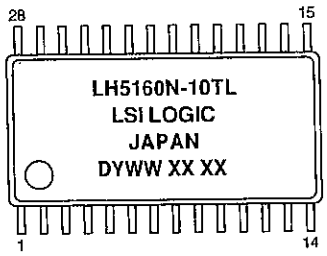


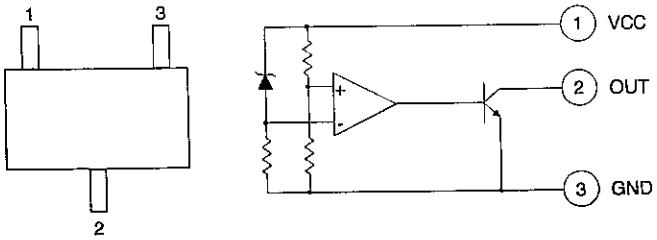

[CCD waveform model]

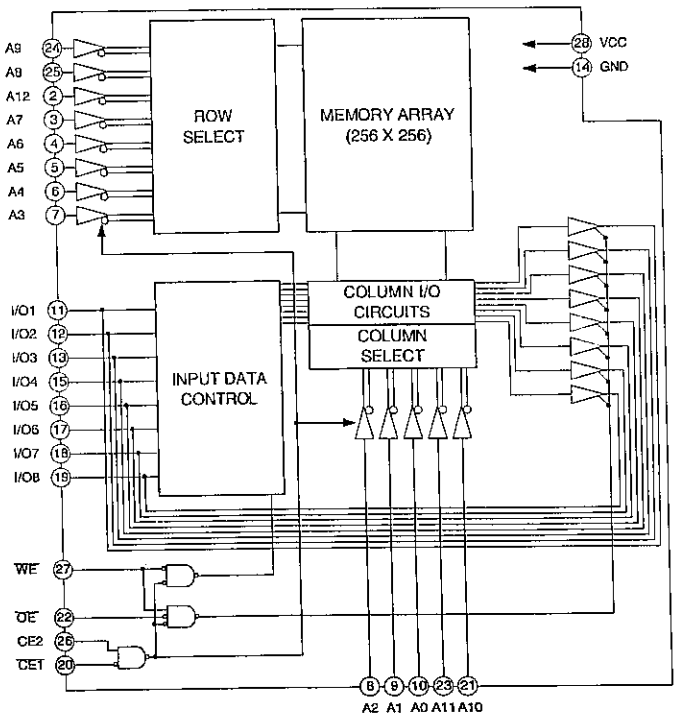
⑥ By adjusting the CCD PWB as shown above, focus is adjusted and scan line is aligned.
After completion of the CCD adjustment, tighten the two red screws and apply screw lock.

## [2] IC signal name

**VHILH5116NA10**
**VHILH5160N10T**
**VHILH5268TH10**



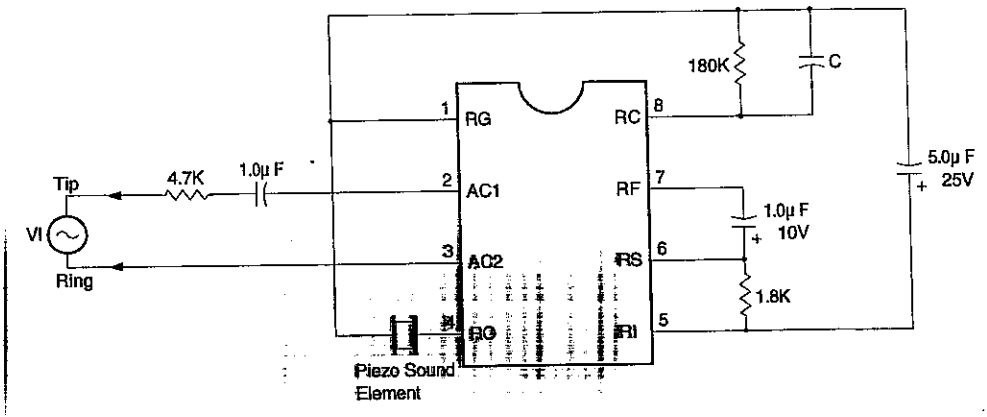




Block diagram

**VHIMC34012-1P**

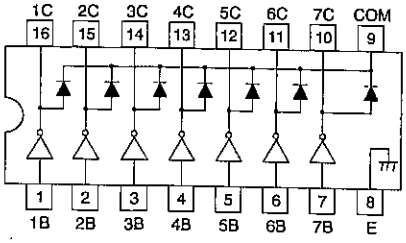
**APPLICATION CIRCUIT**



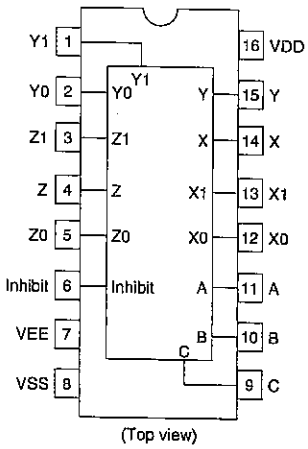

**APPLICATION CIRCUIT PERFORMANCE**

| Characteristic | Typical Value | Units |
|---|---|---|
| Output Tone Frequencies<br>MC34012-1<br>Warble Frequency | <br>832/1040<br>13 | <br><br>Hz |
| Output Voltage<br>(VI>60Vrms,20Hz) | 20 | Vp-p |
| Output Duty Cycle | 50 | % |
| Ringing Start Input Voltage (20Hz) | 36 | Vrms |
| Ringing Stop Input Voltage (20Hz) | 28 | Vrms |
| Maximum AC Input Voltage (<68Hz) | 150 | Vrms |
| Impedance When Ringing<br>VI=40Vrms,15Hz<br>VI=130Vrms,23Hz | <br>20<br>10 | K |
| Impedance When Not Ringing<br>VI=10Vrms,24Hz<br>VI=2.5Vrms,24Hz<br>VI=10Vrms,5.0Hz<br>VI=3.0Vrms,200~3200Hz | <br>28<br>>1.0<br>55<br>>1.0 | <br>KΩ<br>MΩ<br>KΩ<br>MΩ |
| Maximum Transient Input Voltage<br>(T<2.0 ms) | 1500 | V |

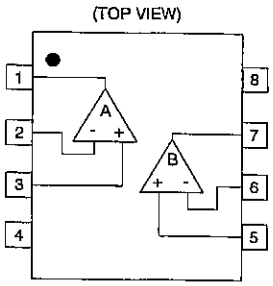
## VHIULN2003AN/




## VHINJU4053D-1

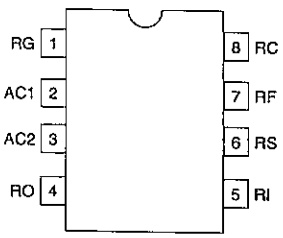



## VHINJM4558F-1

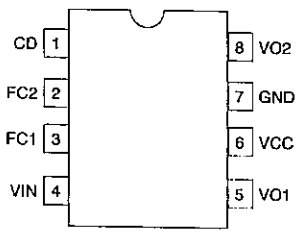



1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V-
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. V+

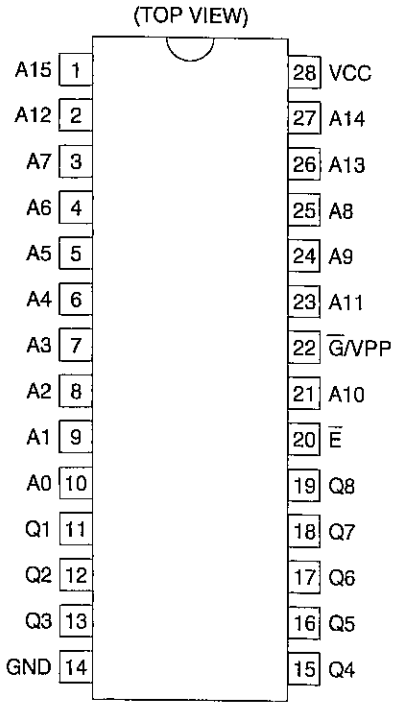
## VHIMC34012-1P




## VHIMC34119/-1

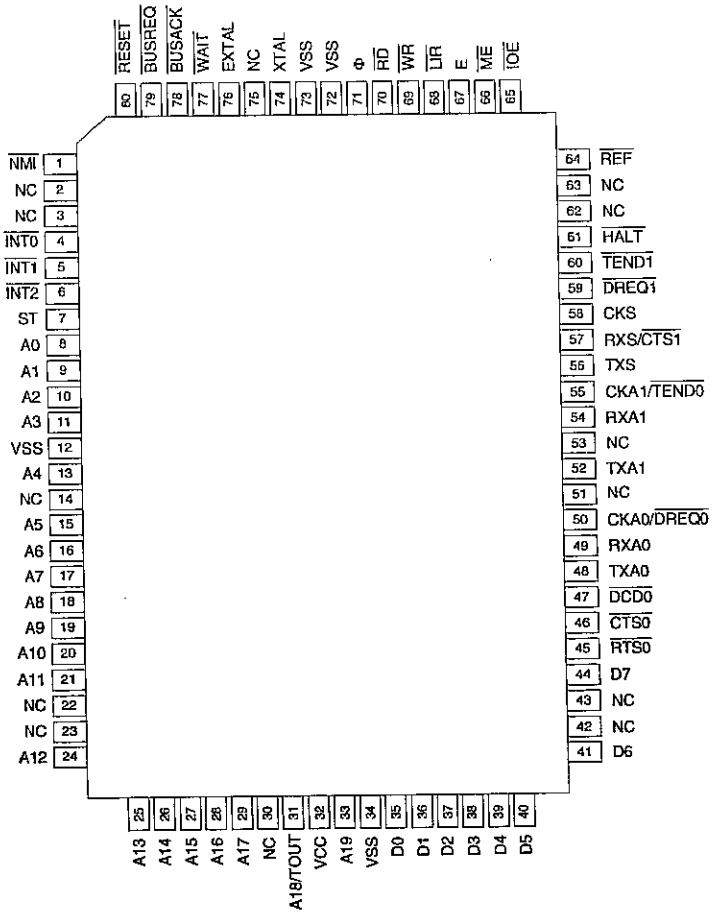



## 512K EP-ROM (VHI27C51215TI)

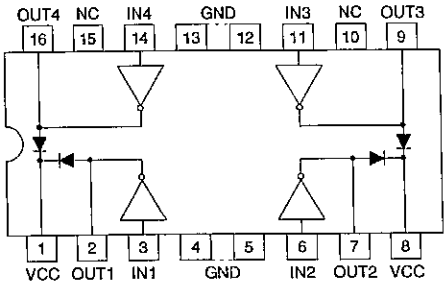



| Pin name | Signal |
|---|---|
| A0~A15 | Address input |
| $\overline{E}$ | Chip enable/power down |
| $\overline{G}$/VPP | Output enable/+12V ~ -13V programming power |
| GND | Ground |
| Q1~Q8 | Data output |
| VCC | +5V power |

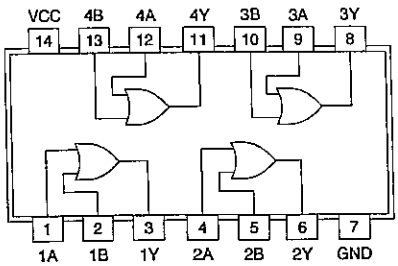
## VHI64180ZRS06



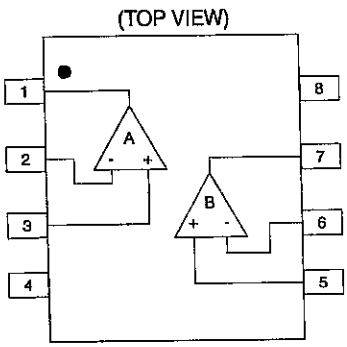

## VHILB1730//-1



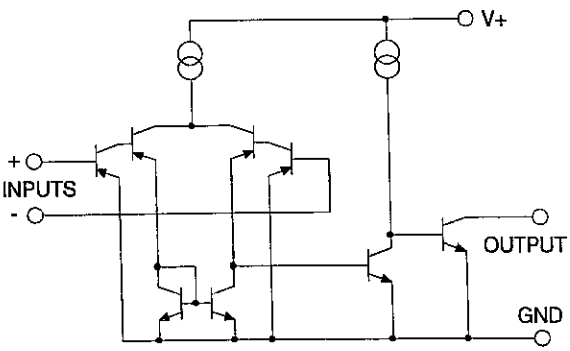

## VHIHD74HC32FM



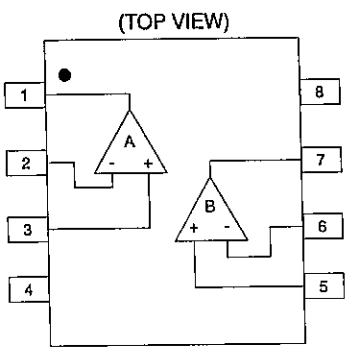

## VHINJM2903M/-



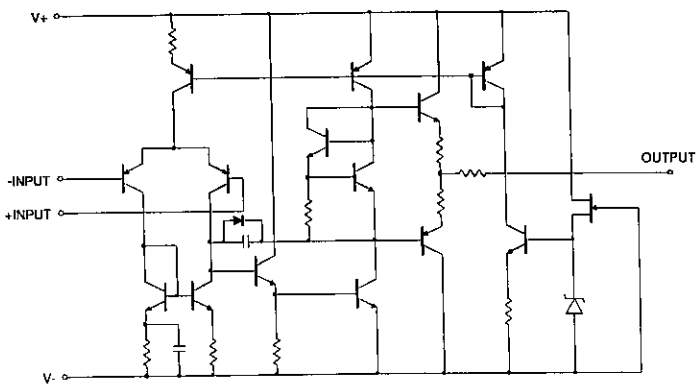

1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V-
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. V+



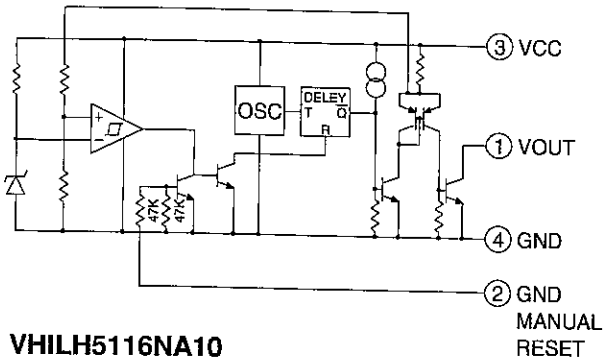

## VHINJM4558F-1



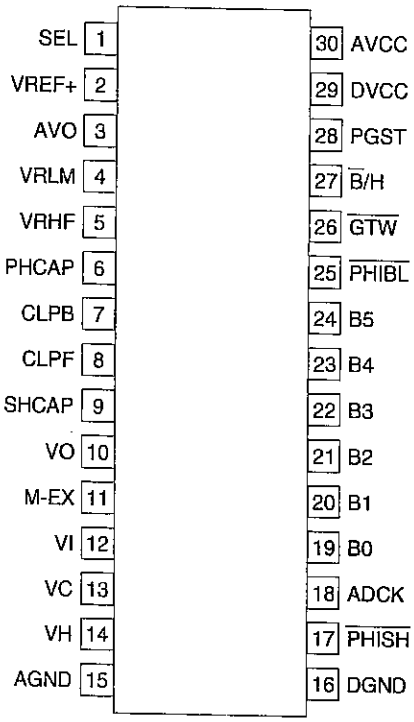

1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V-
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. V+



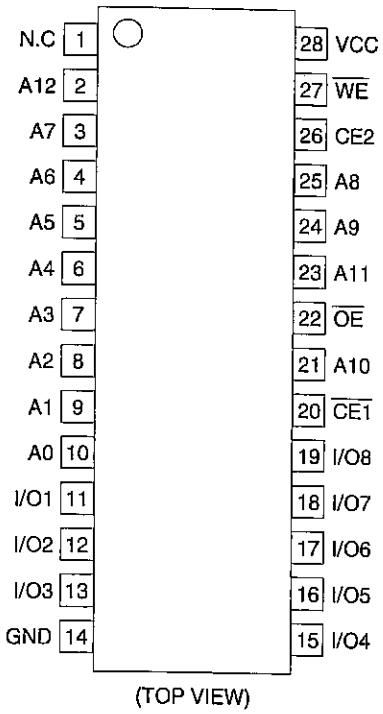
## VHIPST591CMT1




## VHITLS1019/-1




## VHILH5116NA10
## VHILH5268TH10
## VHILH5160N10T




(TOP VIEW)

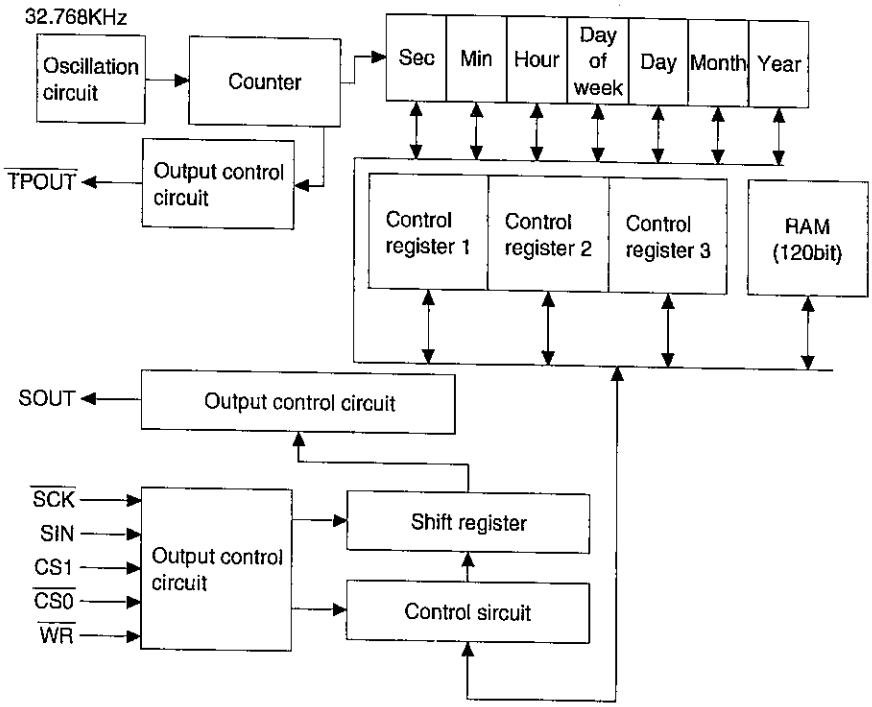
| Pin name | Signal |
|---|---|
| A0~A12 | Address input |
| $\overline{CE1}$/CE2 | Chip enable |
| $\overline{WE}$ | Write enable |
| $\overline{OE}$ | Output enable |
| I/O1~I/O8 | Data I/O |
| VCC | Power source |
| GND | Ground |
| N.C. | Non connection |

## VHIRTC4553F-1

(TOP VIEW)

| | | | |
|---|---|---|---|
| 1 | GND | 8 | VDD |
| 2 | $\overline{WR}$ | 9 | L4 |
| 3 | SIN | 10 | L5 |
| 4 | $\overline{SCK}$ | 11 | $\overline{CS0}$ |
| 5 | L1 | 12 | CS1 |
| 6 | L2 | 13 | SOUT |
| 7 | L3 | 14 | $\overline{TPOUT}$ |

L1 - L5: Test pins.
Use them in OPEN state



# SHARP PARTS GUIDE

## MODEL FO-235

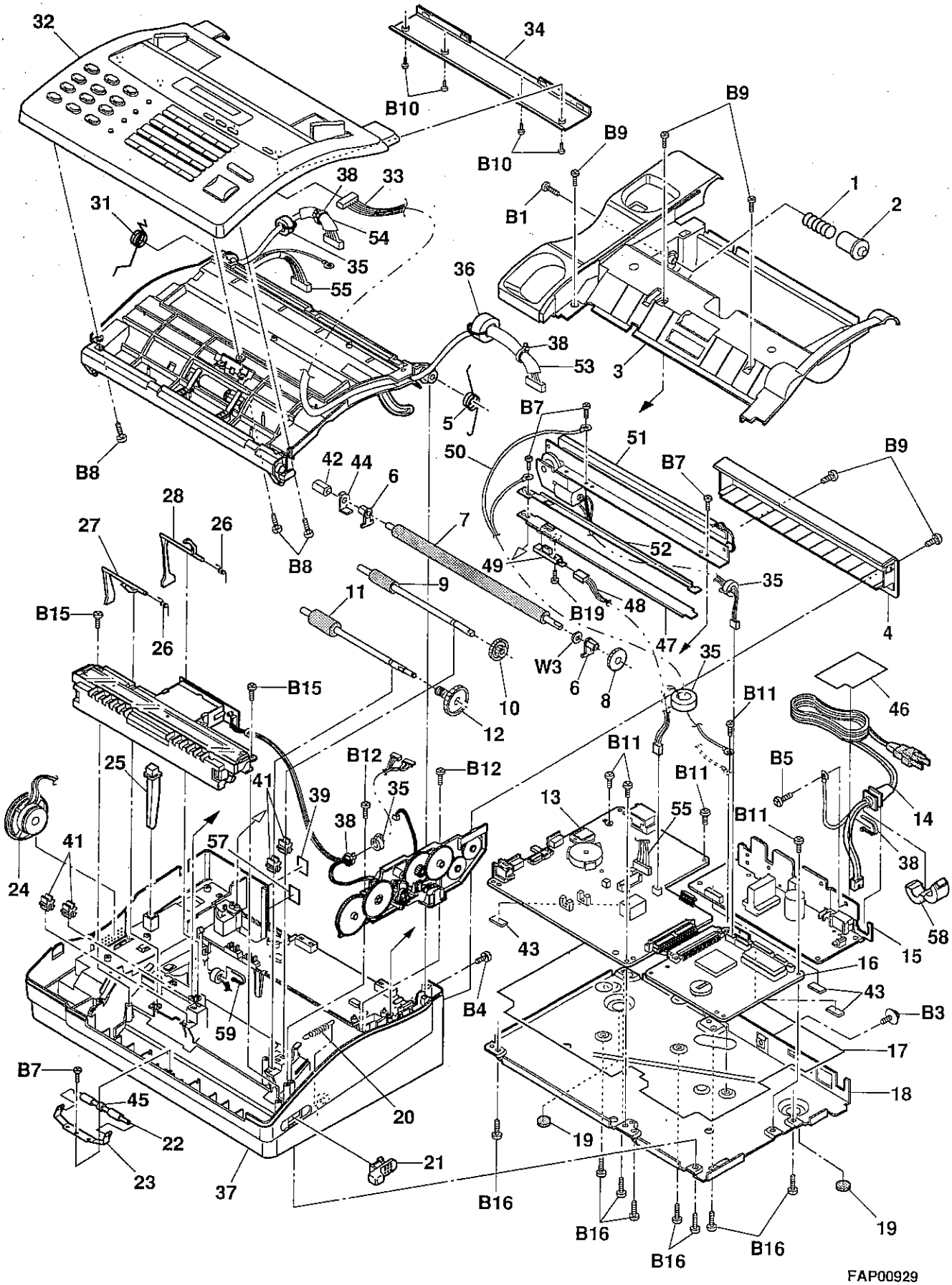
**AT: AUSTRIA**
**PT: PORTUGAL**

CONTENTS


1 Cabinet, etc.
2 Upper cabinet
3 Document guide upper
4 Drive unit
5 Optical unit
6 Packing material & Accessories
7 Control PWB unit
8 TEL-Liu PWB unit
9 Power supply PWB unit
10 CCD PWB unit
50 Hardware parts
■ Index


Because parts marked with "⚠" is indispensable for the machine safety maintenance and operation, it must be replaced with the parts specific to the product specification.

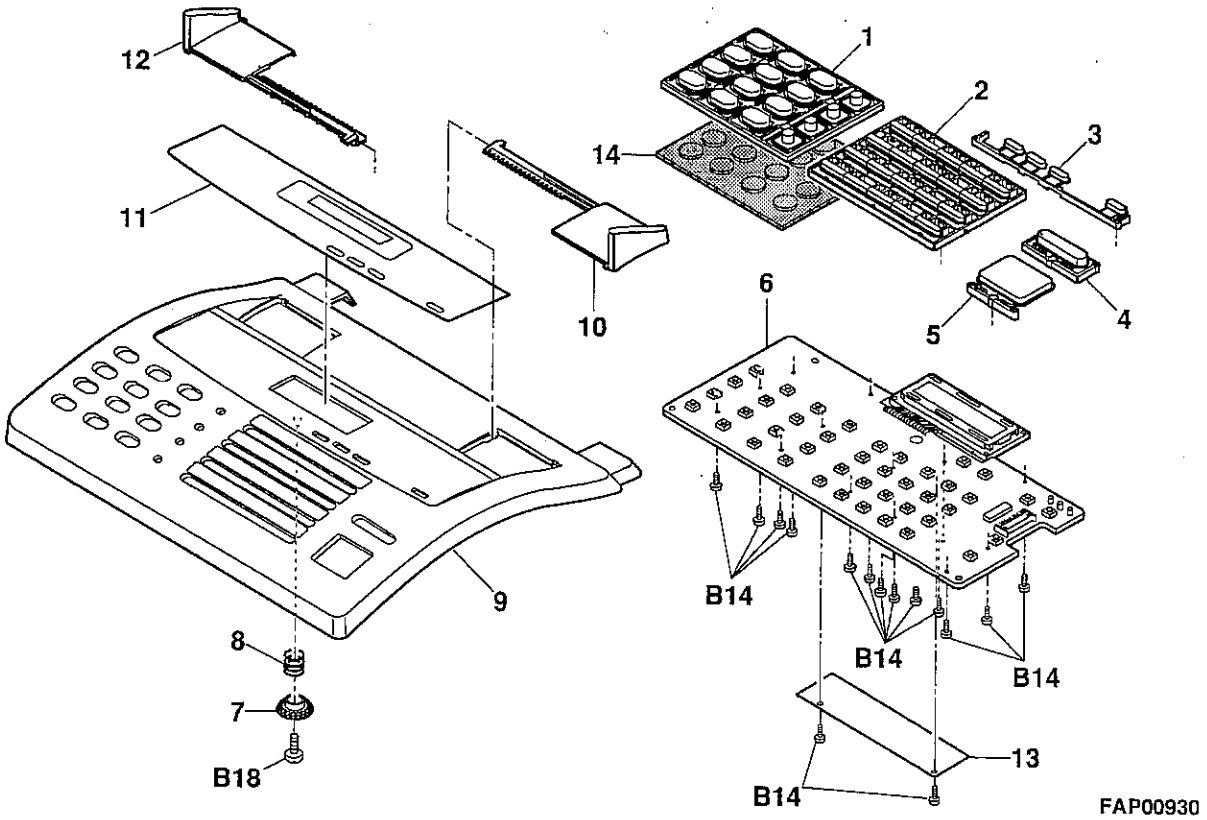
## 1 Cabinet, etc.



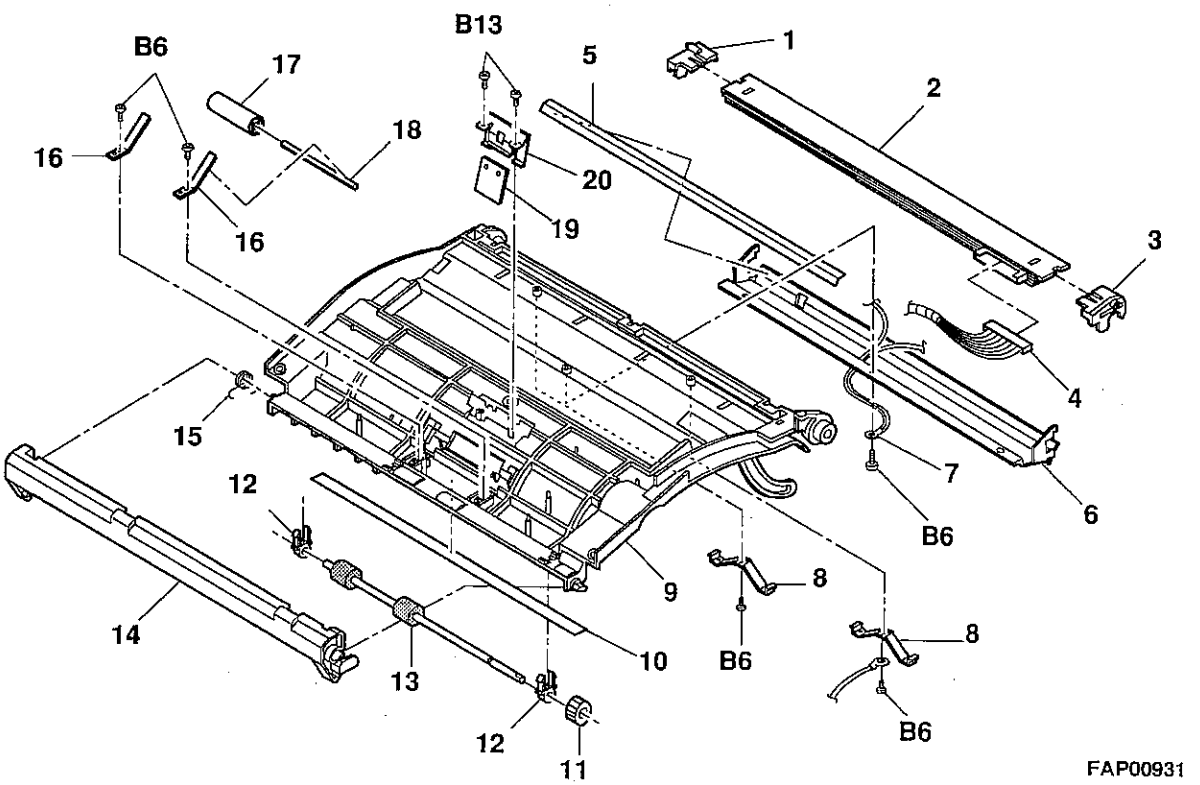
## 1 Cabinet, etc.

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | MSPRC2550XHZZ | AB | | C | Spool spring |
| 2 | PGiDM2289SCZA | AC | | C | Spool guide |
| 3 | GDAi−2062XHZD | AZ | | D | Hand set stand |
| 4 | GCÖVA2332XHZA | AU | | D | Rear cover |
| 5 | MSPRC2621XHZA | AN | | C | Spring (open and shut) (R) |
| 6 | NBRGP2154XHZZ | AK | | C | Platen bearing |
| 7 | NRÖLR2276XHZZ | BB | | C | Platen roller |
| 8 | NGERH2203XHZZ | AE | | C | Platen gear |
| 9 | NRÖLR2274XHZZ | AY | | C | Transfer roller |
| 10 | NGERH2205XHZZ | AD | | C | Transfer gear 1 |
| 11 | NRÖLR2273XHZA | AZ | | C | Paper feed roller |
| 12 | NGERH2204XHZZ | AM | | C | Paper feed gear |
| 13 | CPWBF2659FF04 | CB | | E | TEL−Liu PWB unit [AT] |
| | CPWBF2659FF13 | CB | | E | TEL−Liu PWB unit [PT] |
| ⚠ 14 | QACCV662ASCZZ | AW | | B | AC cord |
| ⚠ 15 | RDENT2071XH01 | BU | | E | Power supply PWB unit |
| 16 | CPWBS2629FF05 | BU | | E | Control PWB unit (without ROM) |
| 17 | PSHEZ2925XHZZ | BU | | C | Insulator sheet |
| 18 | LPLTM2653XHZB | AT | | C | Bottom plate |
| 19 | GLEGG2058SCZA | AD | | C | Rubber, foot |
| 20 | MSPRT2540XHZZ | AC | | C | Return spring, release lever |
| 21 | JKNBP2060XHZA | AK | | C | Release knob |
| 22 | NRÖLP2249XHZZ | AE | | C | Pinch roller 2 |
| 23 | MSPRP2535XHZZ | AD | | C | Pinch spring 2 |
| 24 | CCNW−4088XH01 | AY | | C | Speaker ass'y |
| 25 | MLEVP2156XHYA | AL | | C | Hook sw. lever |
| 26 | MSPRC2544XHZZ | AB | | C | Return spring 1, sensor lever |
| 27 | MLEVP2125XHZZ | AE | | C | Lever, document sw. |
| 28 | MLEVP2167XHZZ | AG | | C | Lever, front sensor |
| 31 | MSPRC2620XHZA | AN | | C | Spring (open and shut) (L) |
| 32 | CCABA2223XH15 | BP | | E | Upper cabinet ass'y [AT] |
| | CCABA2223XH13 | BP | | E | Upper cabinet ass'y [PT] |
| 33 | CCNW−4085XH01 | AW | | C | Panel cable |
| 34 | LPLTP2649XHZZ | AK | | C | Plate, document guide upper |
| 35 | RCÖRF2063SCZZ | AE | | C | Core (TRA20) |
| 36 | RCÖRF2064SCZZ | AE | | C | Core (TRA31) |
| 37 | GCABB2224XHZC | BK | | D | Lower cabinet |
| 38 | LBNDJ2007SCZZ | AA | | C | Band (GT−80) |
| 39 | PSHEZ2880XHZZ | AK | | C | Jack sheet |
| 41 | NBRGP2138XHZZ | AD | | C | Bearing |
| 42 | LBSHZ1100CCZZ | AC | | C | Bushing |
| 43 | PSPAZ2177XHZZ | AK | | C | PWB spacer |
| 44 | LPLTM2669XHZZ | AV | | C | Platen stopper |
| 45 | NRÖLR2278XHZZ | AR | | C | Exit roller |
| 46 | PSHEZ2923SCZZ | AC | | C | PS insulator sheet |
| 47 | LPLTM2658XHZZ | AS | | C | Reco. paper guide (Lower) |
| 48 | QCNW−4113XHZZ | AR | | C | Sensor cable |
| 49 | VHPGP2S13//−1 | AN | | B | Photo transistor (GP2S13) |
| 50 | QCNW−4114XHZZ | AR | | C | Cutter earth cable |
| 51 | PCUT−2030SCZA | BB | | C | Cutter |
| 52 | LPLTM2657XHZA | AH | | C | Reco. paper guide (Upper) |
| 53 | PTUBU2024SCZZ | AB | | C | Tube |
| 54 | PTUBU2025SCZZ | AB | | C | Tube |
| 55 | QCNW−4140XHZZ | BK | | C | 10 key cable |
| 57 | PSHEZ2701XHZZ | AQ | | C | UK blind sheet |
| 58 | RCÖRF6658RCZZ | AK | | C | Core (TFC−16−8−16) |
| 59 | LBNDJ2003SCZZ | AA | | C | Band |

## 2 Upper cabinet




## 3 Document guide upper



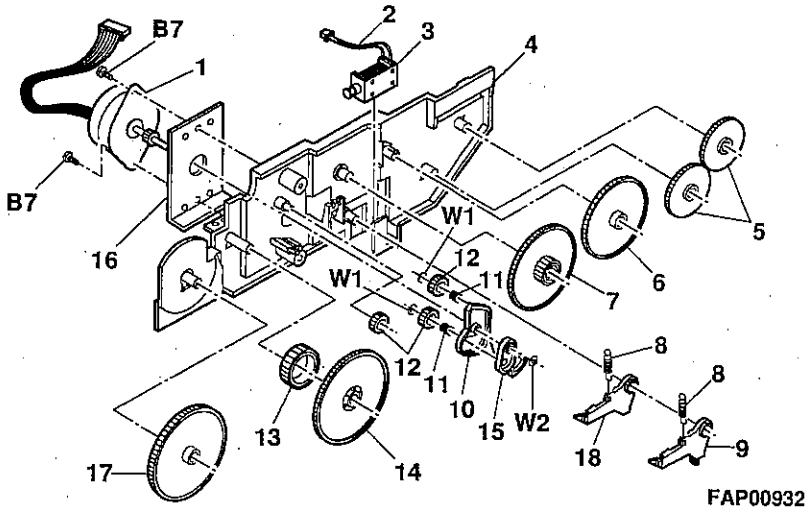
## 2 Upper cabinet

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | JBTN-2107XHZZ | AG | | C | 12 key |
| 2 | JBTN-2086XHZA | AQ | | C | Direct key |
| 3 | JBTN-2106XHZC | AD | | C | Mode key |
| 4 | JBTN-2088XHZA | AP | | C | Stop key |
| 5 | JBTN-2087XHZA | AP | | C | Start key |
| 6 | DCEKP325AXHZZ | BK | | E | Panel PWB unit |
| 7 | NGERP2206XHZZ | AE | | C | Pinion gear |
| 8 | MSPRC2641XHZZ | AB | | C | Hopper spring |
| 9 | GCABA2223XHZD | AV | | D | Upper cabinet [AT] |
| | GCABA2223XHZC | BA | | D | Upper cabinet [PT] |
| 10 | PGiDP2384XHZA | AR | | C | Hopper guide (R) |
| 11 | HPNLC2237SCZA | AG | | D | Deco. panel [AT] |
| | HPNLC2237SCZZ | AG | | D | Deco. panel [PT] |
| 12 | PGiDP2385XHZA | AR | | C | Hopper guide (L) |
| 13 | PSHEZ2906SCZZ | AB | | C | Protect sheet |
| 14 | PGUMM2111XHZZ | AD | | C | Rubber key |
| | (Unit) | | | | |
| 901 | CCABA2223XH15 | BP | | E | Upper cabinet ass'y [AT] |
| | CCABA2223XH13 | BP | | E | Upper cabinet ass'y [PT] |

## 3 Document guide upper

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | PTME-2036XHZA | AK | | C | Head supporter (R) |
| 2 | RHEDZ2041SCZZ | BP | | B | Thermal head |
| 3 | PTME-2037XHZZ | AK | | C | Head supporter (L) |
| 4 | CCNW-4087XH01 | AU | | C | Head cable |
| 5 | PSHEZ2878XHZZ | AK | | C | Head protector |
| 6 | LANGH2789XHZZ | AX | | C | Head cover |
| 7 | QCNW-4100XHZZ | AM | | C | Head earth cable |
| 8 | MSPRP2616SCZZ | AC | | C | Head pressure spring |
| 9 | PGiDP2386XHZB | AS | | C | Document guide upper |
| 10 | PSHEZ2943XHZZ | AF | | C | Rear sheet |
| 11 | NGERH2207XHZZ | AD | | C | Transfer gear 2 |
| 12 | NBRGP2141XHZZ | AH | | C | Transfer bearing 2 |
| 13 | NROLR2275XHZZ | AY | | C | Transfer roller |
| 14 | MLEVP2157XHZZ | AL | | C | Release lever |
| 15 | MSPRT2622XHZZ | AK | | C | Release lever spring |
| 16 | MSPRP2617XHZA | AK | | C | Pressure spring |
| 17 | NROLP2194XHZZ | AC | | C | Pinch roller 1 |
| 18 | NSFTZ2228SCZZ | AC | | C | Pinch roller shaft |
| 19 | LPLTG2593XHZZ | AG | | C | Rubber, separator |
| 20 | MSPRP2539SCZA | AE | | C | Separate spring |

## 4 Drive unit

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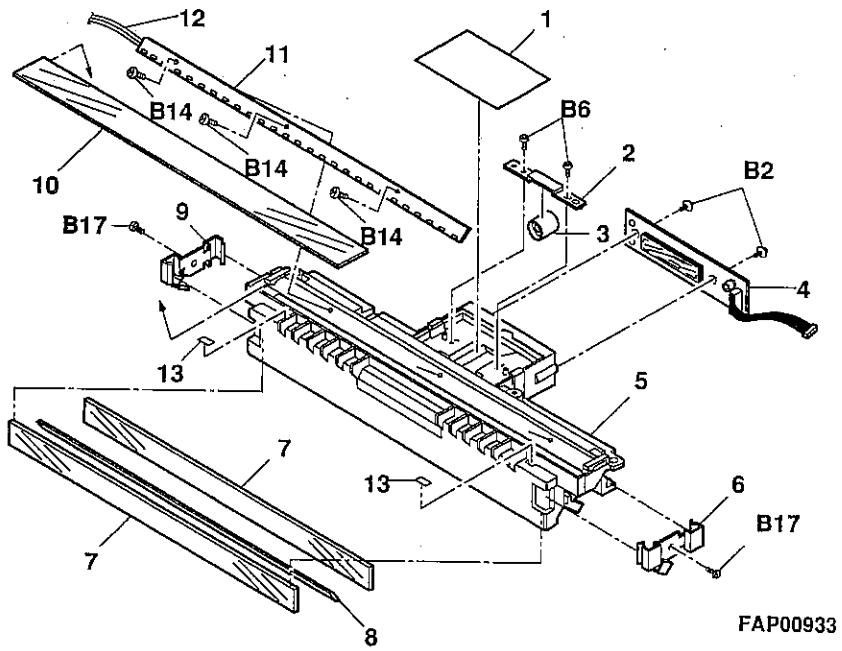
## 5 Optical unit

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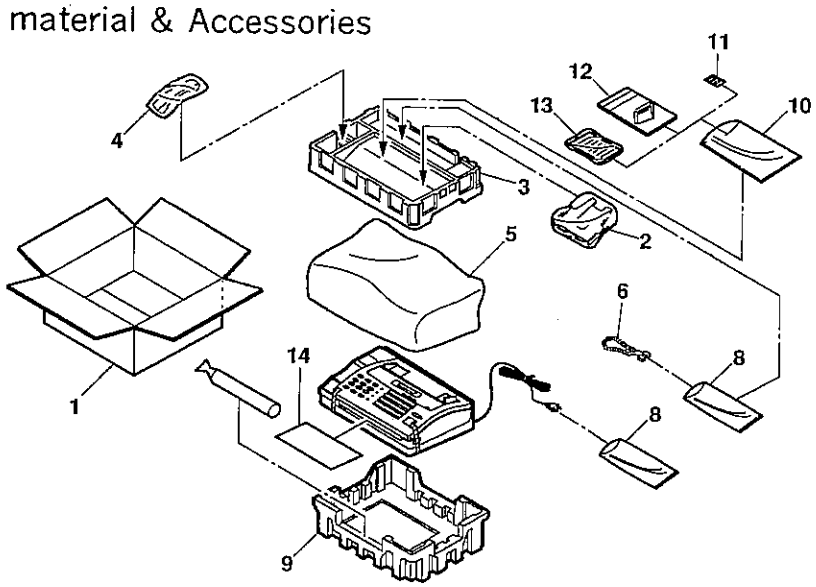
## 6 Packing material & Accessories

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## 4 Drive unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | RMŌTZ2104SCZZ | BM | | B | Motor |
| 2 | QCNW-4106XHZZ | AL | | C | Solenoid cable |
| 3 | PMAGE2050SCZB | AF | | B | Solenoid |
| 4 | LPLTP2655XHZZ | AK | | C | Motor plate |
| 5 | NGERH2210XHZZ | AC | | C | Idle gear 1 |
| 6 | NGERH2201XHZZ | AE | | C | Idle gear 4 |
| 7 | NGERH2198XHZZ | AE | | C | Reduction gear 2 |
| 8 | MSPRC2536XHZZ | AC | | C | Return spring locking pawl |
| 9 | PTME-2038XHZA | AK | | C | Locking pawl 1 |
| 10 | LPLTP2651XHZA | AH | | C | Gear plate 2 |
| 11 | MSPRC2537XHZZ | AC | | C | Pressure spring 1 |
| 12 | NGERH2163XHZZ | AK | | C | Gear |
| 13 | NGERH2202XHZZ | AE | | C | Reduction gear 3 |
| 14 | NGERH2197XHZZ | AF | | C | Reduction gear 1 |
| 15 | LPLTP2650XHZA | AK | | C | Gear plate 1 |
| 16 | LPLTM2665XHZZ | AM | | C | Heat sink |
| 17 | NGERH2199XHZZ | AF | | C | Idle gear 1 |
| 18 | PTME-2040XHZZ | AK | | C | Locking pawl 2 |

## 5 Optical unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | PSHEZ2879XHZZ | AK | | C | Shading sheet |
| 2 | MSPRP2512XHZZ | AK | | C | Lens spring |
| 3 | PLNS-2043XHZZ | AU | | B | Lens |
| 4 | DCEKD281AXHZZ | BV | | E | CCD PWB unit |
| 5 | LFRM-2147XHZZ | AY | | C | Optical frame |
| 6 | MSPRP2618SCZZ | AD | | C | Mirror spring 1 |
| 7 | PMiR-2062XHZZ | AM | | C | Mirror 2 |
| 8 | PMiR-2061XHZZ | AH | | C | Mirror 1 |
| 9 | MSPRP2619SCZZ | AD | | C | Mirror spring 2 |
| 10 | PGLSP2043XHZZ | AK | | C | Reader glass |
| 11 | VHPLT4657E6-1 | AW | | B | LED (LT4657E6) [AT] |
| | VHPSNK05A30-1 | AV | | B | LED (SNK05A30) [PT] |
| 12 | QCNW-4111XHZZ | AL | | C | LED cable |
| 13 | PSHEZ2915XHZZ | AY | | C | Dustproof sheet |

## 6 Packing material & Accessories

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | SPAKC4208BTZZ | AL | | D | Packing case |
| 2 | LPLTP2656XHZZ | AX | | C | Tray. reco. paper |
| 3 | SPAKA4085BTZZ | AH | | D | Upper pat |
| 4 | DUNTK4996SCŌG | AX | | E | Hand set |
| 5 | SPAKP3385SCZZ | AG | | D | Vinyl cover |
| 6 | QCNW-3976XHŌG | AT | | C | Curl cord |
| 8 | SSAKA3001CCZZ | AA | | D | Vinyl bag (140×360mm) |
| 9 | SPAKA4086BTZZ | AH | | D | Lower pat |
| 10 | SSAKA0003HCZZ | AA | | D | Vinyl bag (240×360mm) [AT] |
| | SSAKH3010CCZZ | AA | | D | Vinyl bag (180×240mm) [PT] |
| 11 | TLABH3281XHZA | AR | | D | Rapid key labels |
| 12 | TiNSG3347BTZZ | AQ | | D | Operation manual [AT] |
| | TiNSE3333BTZZ | AQ | | D | Operation manual [PT] |
| 13 | PHŌP-2078XHZZ | AV | | C | Extention hopper |
| 14 | PCUSS2072BTZZ | AC | | C | Cushion |

## 7 Control PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| ⚠ 1 | UBATL2029SCZZ | AG | | B | Battery (CR2032T23) | [BAT1] |
| 2 | VCEAEA1CW106M | AC | | C | Capacitor (16WV 10μF) | [C1] |
| 3 | VCEAEA1EW475M | AA | | C | Capacitor (25WV 4.7μF) | [C2] |
| 4 | VCEAEA1CW106M | AC | | C | Capacitor (16WV 10μF) | [C3] |
| 5 | VCEAEA1CW336M | AB | | C | Capacitor (16WV 33μF) | [C4] |
| 6 | VCEAEA1CW106M | AC | | C | Capacitor (16WV 10μF) | [C5] |
| 7 | VCEAEA1AW226M | AA | | C | Capacitor (10WV 22μF) | [C6] |
| 8 | VCEAEA1EW226M | AA | | C | Capacitor (25WV 22μF) | [C7] |
| 9 | VCEAEA1EW226M | AA | | C | Capacitor (25WV 22μF) | [C8] |
| 10 | VCCSTV1HL102J | AA | | C | Capacitor (50WV 1000PF) | [C100] |
| 11 | VCKYTV1CF105Z | AB | | C | Capacitor (16WV 1.0μF) | [C101] |
| 12 | VCKYTQ1EB104K | AA | | C | Capacitor (25WV 0.10μF) | [C102] |
| 13 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C105] |
| 14 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C107] |
| 15 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C108] |
| 16 | VCKYTV1CF105Z | AB | | C | Capacitor (16WV 1.0μF) | [C109] |
| 17 | VCCCTV1HH390J | AA | | C | Capacitor (50WV 39PF) | [C110] |
| 18 | VCCCTV1HH180J | AA | | C | Capacitor (50WV 18PF) | [C111] |
| 19 | VCKYTV1CF105Z | AB | | C | Capacitor (16WV 1.0μF) | [C112] |
| 20 | VCCSTV1HL102J | AA | | C | Capacitor (50WV 1000PF) | [C113] |
| 21 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C114] |
| 22 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C115] |
| 23 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.01μF) | [C116] |
| 24 | VCKYTQ1CF105Z | AE | | C | Capacitor (16WV 1μF) | [C117] |
| 25 | VCKYTQ1CF105Z | AE | | C | Capacitor (16WV 1μF) | [C118] |
| 26 | VCKYTV1HB472K | AA | | C | Capacitor (50WV 4700PF) | [C119] |
| 27 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C120] |
| 28 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C121] |
| 29 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C122] |
| 30 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C123] |
| 31 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.1μF) | [C124] |
| 32 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.010μF) | [C125] |
| 33 | VCSAPJ1EE225M | AD | | C | Capacitor (25WV 2.2μF) | [C126] |
| 34 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C128] |
| 35 | VCKYTV1CF105Z | AB | | C | Capacitor (16WV 1μF) | [C129] |
| 36 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C130] |
| 37 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C131] |
| 38 | VCCSTV1HL102J | AA | | C | Capacitor (50WV 1000PF) | [C132] |
| 39 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C133] |
| 40 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C134] |
| 41 | VCCCTQ1HH180J | AA | | C | Capacitor (50WV 18PF) | [C135] |
| 42 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C136] |
| 43 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C137] |
| 44 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C138] |
| 45 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C139] |
| 46 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C140] |
| 47 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C141] |
| 48 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C142] |
| 49 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C145] |
| 50 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C146] |
| 51 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C147] |
| 52 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C148] |
| 53 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C149] |
| 54 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C150] |
| 55 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C151] |
| 56 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C152] |
| 57 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C153] |
| 58 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C154] |
| 59 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C155] |
| 60 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C156] |
| 61 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C157] |
| 62 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C158] |
| 63 | VCKYTV1HB472K | AA | | C | Capacitor (50WV 4700PF) | [C159] |
| 64 | VCSAPJ1CE475M | AE | | C | Capacitor (16WV 4.7μF) | [C160] |
| 65 | VCKYTV1HB272K | AA | | C | Capacitor (50WV 2700pF) | [C161] |
| 66 | VCKYTV1EF104Z | AA | | C | Capacitor (25WV 0.10μF) | [C162] |
| 67 | QCNCM7014SC0G | AB | | C | Connector (7pin) | [CNCCD] |
| 68 | QCNCM7014SC0D | AB | | C | Connector (4pin) | [CNCUT] |
| 69 | QCNCM2436SC5J | AB | | C | Connector (50pin) | [CNLIU] |
| 70 | QCNCM7014SC0F | AB | | C | Connector (6pin) | [CNMT] |
| 71 | QCNCM7014SC0B | AD | | B | Connector (2pin) | [CNPLG] |
| 72 | QCNCM2389SC2B | AE | | C | Connector (22pin) | [CNPN] |
| 73 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D1] |
| 74 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D2] |
| 75 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D3] |
| 76 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D4] |
| 77 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D5] |
| 78 | VHViCPN20//-1 | AD | | B | IC protector (ICP-N20) | [F1] |
| 79 | VHViCPN20//-1 | AD | | B | IC protector (ICP-N20) | [F2] |
| 80 | VHiR96SHF//-1 | BD | | B | IC (R96SHF) | [IC1] |

## 7 Control PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 81 | VHiC64180ZRS06 | AX | | B | IC (64180ZRS06) | [IC2] |
| 82 | VHiCTLS1019/-1 | AU | | B | IC (TLS1019) | [IC3] |
| 83 | VHiCLH5160N10T | AP | | B | IC (LH5160N10T) | [IC4] |
| 84 | VHiCLZ9AH11/-1 | AZ | | B | IC (LZ9AH11) | [IC5] |
| 85 | VHiCLH5268TH10 | AR | | B | IC (LH5268TH10) | [IC6] |
| 86 | VHiCLH5116NA10 | AL | | B | IC (LH5116NA10) | [IC7] |
| 87 | VHiCLB1730//-1 | AH | | B | IC (LB1730) | [IC8] |
| 88 | QSÖCZ2051SC32 | AC | | C | IC socket (32pin) | [IC9] |
| | VHi27010FRL0C | BL | N | B | IC (27010FRL0C) | [IC9(AT)] |
| | VHi27010FRK0C | BL | N | B | IC (27010FRK0C) | [IC9(PT)] |
| 89 | VHiCTA7291PV-1 | AM | | B | IC (TA7291PV) | [IC10] |
| 90 | VHiCRTC4553F-1 | AS | | B | IC (RTC4553F) | [IC11] |
| 91 | VHiCNJM4558F-1 | AD | | B | IC (NJM4558MF) | [IC101] |
| 92 | VHiCHD74HC32FM | AC | | B | IC (HD74HC32FM) | [IC103] |
| 93 | VHiCPST591CMT1 | AE | | B | IC (PST591CMT1) | [IC104] |
| 94 | VHiCNJM2903M/- | AD | | C | IC (NJM2903M) | [IC105] |
| 95 | VRS-TP2BD000J | AA | | C | Resistor (1/8W 0Ω ±5%) | [L100] |
| 96 | VRS-TP2BD000J | AA | | C | Resistor (1/8W 0Ω ±5%) | [L101] |
| 97 | RCiLZ5017SCZZ | AB | | C | Coil | [L102] |
| 98 | VRS-TP2BD122J | AA | | C | Resistor (1/8W 1.2KΩ ±5%) | [L103] |
| 99 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L104] |
| 100 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L105] |
| 101 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L106] |
| 102 | RCiLZ2104SCZZ | AK | | C | Inductor | [L107] |
| 103 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L108] |
| 104 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L109] |
| 105 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L110] |
| 106 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L111] |
| 107 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [L112] |
| 108 | VS2SC1214-CDC | AD | | B | Transistor (2SC1214-CDC) | [Q1] |
| 109 | VS2SC2412KS-1 | AB | | B | Transistor (2SC2412KS) | [Q102] |
| 110 | VSDTC114EK/-1 | AB | | B | Transistor (DTC114EK) | [Q103] |
| 111 | VSDTC114EK/-1 | AB | | B | Transistor (DTC114EK) | [Q104] |
| 112 | RR-XA02R0SC2E | AC | | C | Fuse resistor (1/4W 2.0Ω) | [R2] |
| 113 | VRSTS2AD1742F | AA | | C | Resistor (1/10W 17.4KΩ ±1%) | [R100] |
| 114 | VRSTS2AD8662F | AA | | C | Resistor (1/10W 86.6KΩ ±1%) | [R101] |
| 115 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R103] |
| 116 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R104] |
| 117 | VRS-TS2AD511J | AA | | C | Resistor (1/10W 510Ω ±5%) | [R105] |
| 118 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R106] |
| 119 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R110] |
| 120 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R111] |
| 121 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R112] |
| 122 | VRSTS2AD1183F | AA | | C | Resistor (1/10W 118KΩ ±1%) | [R114] |
| 123 | VRS-TS2AD302J | AA | | C | Resistor (1/10W 3.0KΩ ±5%) | [R115] |
| 124 | VRSTS2AD4752F | AA | | C | Resistor (1/10W 47.5KΩ ±1%) | [R116] |
| 125 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R117] |
| 126 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R118] |
| 127 | VRSTS2AD8662F | AA | | C | Resistor (1/10W 86.6KΩ ±1%) | [R119] |
| 128 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R120] |
| 129 | VRS-TS2AD102J | AA | | C | Resistor (1/10W 1KΩ ±5%) | [R121] |
| 130 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R122] |
| 131 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R123] |
| 132 | RCiLZ1044CCZZ | AC | | C | Inductor (NZ3216A501B01) | [R124] |
| 133 | VRS-TP2BD000J | AA | | C | Resistor (1/8W 0Ω ±5%) | [R125] |
| 134 | VRS-TS2AD3R0J | AA | | C | Resistor (1/10W 3.0Ω ±5%) | [R126] |
| 135 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R127] |
| 136 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R128] |
| 137 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R129] |
| 138 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R130] |
| 139 | VRS-TS2AD223J | AA | | C | Resistor (1/10W 22KΩ ±5%) | [R131] |
| 140 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R132] |
| 141 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R133] |
| 142 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R134] |
| 143 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R135] |
| 144 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R136] |
| 145 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R137] |
| 146 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R138] |
| 147 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R139] |
| 148 | VRS-TS2AD562J | AA | | C | Resistor (1/10W 5.6KΩ ±5%) | [R140] |
| 149 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R141] |
| 150 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R142] |
| 151 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R143] |
| 152 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R144] |
| 153 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R145] |
| 154 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R146] |
| 155 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R147] |
| 156 | VRS-TS2AD151J | AA | | C | Resistor (1/10W 150Ω ±5%) | [R148] |
| 157 | VRS-TS2AD152J | AA | | C | Resistor (1/10W 1.5KΩ ±5%) | [R149] |
| 158 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R150] |

## 7 Control PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 159 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R151] |
| 160 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R152] |
| 161 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R153] |
| 162 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R154] |
| 163 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R155] |
| 164 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R156] |
| 165 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R157] |
| 166 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R158] |
| 167 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R159] |
| 168 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R160] |
| 169 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R161] |
| 170 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R162] |
| 171 | VRS-TP2BD561J | AA | | C | Resistor (1/8W 560Ω ±5%) | [R163] |
| 172 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R164] |
| 173 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R165] |
| 174 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R167] |
| 175 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R168] |
| 176 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R169] |
| 177 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R170] |
| 178 | VRS-TS2AD622J | AA | | C | Resistor (1/10W 6.2KΩ ±5%) | [R171] |
| 179 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R172] |
| 180 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R173] |
| 181 | VRS-TS2AD472J | AA | | C | Resistor (1/10W 4.7KΩ ±5%) | [R174] |
| 182 | VRS-TS2AD102J | AA | | C | Resistor (1/10W 1KΩ ±5%) | [R175] |
| 183 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R176] |
| 184 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R178] |
| 185 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R179] |
| 186 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R180] |
| 187 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R181] |
| 188 | VRS-TS2AD3R0J | AA | | C | Resistor (1/10W 3.0Ω ±5%) | [R183] |
| 189 | VRS-TS2AD623J | AA | | C | Resistor (1/10W 62KΩ ±5%) | [R185] |
| 190 | VRS-TS2AD221J | AA | | C | Resistor (1/10W 220Ω ±5%) | [R188] |
| 191 | VRS-TS2AD512J | AA | | C | Resistor (1/10W 5.1KΩ ±5%) | [R189] |
| 192 | VRS-TS2AD153J | AA | | C | Resistor (1/10W 15KΩ ±5%) | [R190] |
| 193 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R191] |
| 194 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R192] |
| 195 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R193] |
| 196 | VRS-TS2AD474J | AA | | C | Resistor (1/10W 470KΩ ±5%) | [R194] |
| 197 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R195] |
| 198 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R196] |
| 199 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R197] |
| 200 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R198] |
| 201 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R199] |
| 202 | VRS-TS2AD102J | AA | | C | Resistor (1/10W 1.0KΩ ±5%) | [R200] |
| 203 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R201] |
| 204 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R202] |
| 205 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R203] |
| 206 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R204] |
| 207 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R205] |
| 208 | VRS-TS2AD562J | AA | | C | Resistor (1/10W 5.6KΩ ±5%) | [R206] |
| 209 | VRS-TS2AD332J | AA | | C | Resistor (1/10W 3.3KΩ ±5%) | [R207] |
| 210 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R208] |
| 211 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R209] |
| 212 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R210] |
| 213 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R211] |
| 214 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R212] |
| 215 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R213] |
| 216 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R214] |
| 217 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R215] |
| 218 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R216] |
| 219 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R217] |
| 220 | VRS-TS2AD820J | AA | | C | Resistor (1/10W 82Ω ±5%) | [R218] |
| 221 | VRS-TS2AD820J | AA | | C | Resistor (1/10W 82Ω ±5%) | [R219] |
| 222 | VRS-TS2AD511J | AA | | C | Resistor (1/10W 510Ω ±5%) | [R220] |
| 223 | VRS-TS2AD221J | AA | | C | Resistor (1/10W 220Ω ±5%) | [R221] |
| 224 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R222] |
| 225 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R224] |
| 226 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R225] |
| 227 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R226] |
| 228 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R227] |
| 229 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R228] |
| 230 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R230] |
| 231 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R231] |
| 232 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R232] |
| 233 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R233] |
| 234 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R234] |
| 235 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R236] |
| 236 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R237] |
| 237 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R238] |
| 238 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R239] |

## 7 Control PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 239 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R240] |
| 240 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R241] |
| 241 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R242] |
| 242 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R243] |
| 243 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R244] |
| 244 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R245] |
| 245 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R246] |
| 246 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R247] |
| 247 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R248] |
| 248 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R249] |
| 249 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R253] |
| 250 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R254] |
| 251 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R255] |
| 252 | VRS-TS2AD271J | AA | | C | Resistor (1/10W 270Ω ±5%) | [R259] |
| 253 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R260] |
| 254 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R261] |
| 255 | VRS-TS2AD100J | AA | | C | Resistor (1/10W 10Ω ±5%) | [R262] |
| 256 | QSW-D0237FCZZ | AH | | B | Dip-switch (DSS-702) | [SW1] |
| 257 | RCRSP2080SCZZ | AF | | B | Crystal (24,000.14KHz) | [X1] |
| 258 | VHERD27FB3/-1 | AC | | B | Zener diode (RD27FB3) | [ZD1] |
| 259 | RC-K1H224SCZZ | AC | | C | Capacitor (50WV 0.22μF) | |
| | (Unit) | | | | | |
| 901 | CPWBS2629FF05 | BU | | E | Control PWB unit (without ROM) | |

## 8 TEL-Liu PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 1 | VCEAEA1HW106M | AA | | C | Capacitor (50WV 10μF) | [C1] |
| 2 | VCEAEA1AW107M | AB | | C | Capacitor (10WV 100μF) | [C2] |
| 3 | VCEAEA1AW476M | AB | | C | Capacitor (10WV 47μF) | [C3] |
| 4 | VCKYTV1HB102K | AA | | C | Capacitor (50WV 1000PF) | [C4(AT)] |
| | VCKYTV1HB122K | AB | | C | Capacitor (50WV 1200PF) | [C4(PT)] |
| 5 | VCEAEA1AW227M | AB | | C | Capacitor (10WV 220μF) | [C5] |
| 6 | VCEAEA1HW474M | AA | | C | Capacitor (50WV 0.47μF) | [C6] |
| 7 | VCEAEU1HW475M | AA | | C | Capacitor (50WV 4.7μF) | [C7] |
| 8 | VCEAEA1AW476M | AB | | C | Capacitor (10WV 47μF) | [C8] |
| 9 | VCKYTV1HB471K | AA | | C | Capacitor (50WV 470pF) | [C9(AT)] |
| | VCKYTV1HB101K | AA | | C | Capacitor (50WV 100pF) | [C9(PT)] |
| 10 | VCKYTV1HB183K | AA | | C | Capacitor (50WV 0.018μF) | [C10] |
| 11 | VCKYTV1HB822K | AA | | C | Capacitor (50WV 8200PF) | [C11(AT)] |
| | VCKYTV1HB682K | AA | | C | Capacitor (50WV 6800pF) | [C11(PT)] |
| 12 | VCKYTQ1EB184K | AC | N | C | Capacitor (25WV 0.18μF) | [C13(AT)] |
| | VCKYTQ1EB224K | AB | | C | Capacitor (25WV 0.22μF) | [C13(PT)] |
| 13 | VCKYTQ1HB473K | AA | | C | Capacitor (50WV 0.047μF) | [C14] |
| 14 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.010μF) | [C15] |
| 15 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.010μF) | [C17] |
| 16 | VCKYTV1HB222K | AA | | C | Capacitor (50WV 2200pF) | [C18] |
| 17 | VCKYTV1HB472K | AA | | C | Capacitor (50WV 4700PF) | [C19(AT)] |
| | VCKYTV1HB102K | AA | | C | Capacitor (50WV 1000PF) | [C19(PT)] |
| 18 | VCKYTQ1CF474Z | AB | | C | Capacitor (16WV 0.47μF) | [C20] |
| 19 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.010μF) | [C21] |
| 20 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.010μF) | [C22] |
| 21 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.010μF) | [C23] |
| 22 | VCKYTV1HB103K | AB | | C | Capacitor (50WV 0.010μF) | [C24] |
| 23 | VCKYTV1HB272K | AA | | C | Capacitor (50WV 2700PF) | [C25] |
| 24 | VCKYTV1HB272K | AA | | C | Capacitor (50WV 2700PF) | [C26] |
| 25 | VCKYTV1HB272K | AA | | C | Capacitor (50WV 2700PF) | [C27] |
| 26 | QCNCM768VAFZZ | AE | | C | Connector (20pin) | [CNHIC] |
| 27 | VHDDAN212K/-1 | AC | | B | Diode (DAN212K) | [DA1] |
| 28 | VHDDAN212K/-1 | AC | | B | Diode (DAN212K) | [DA2] |
| 29 | VHiTEA1064AT1 | AP | | B | IC (TEA1064AT1) | [IC1] |
| 30 | VS2SC2412KR-1 | AD | | B | Transistor (2SC2412KR) | [Q1] |
| 31 | VSBS108////-1 | AE | | B | Transistor (BS108) | [Q2] |
| 32 | VS2SC2412KR-1 | AD | | B | Transistor (2SC2412KR) | [Q3] |
| 33 | VS2SC2412KR-1 | AD | | B | Transistor (2SC2412KR) | [Q4] |
| 34 | VS2SA1727//-1 | AE | | B | Transistor (2SA1727) | [Q5] |
| 35 | VS2SA1037KR-1 | AB | | B | Transistor (2SA1037KR) | [Q6] |
| 36 | VS2SA1037KR-1 | AB | | B | Transistor (2SA1037KR) | [Q7] |
| 37 | VS2SC2412KR-1 | AD | | B | Transistor (2SC2412KR) | [Q8] |
| 38 | VS2SC2412KR-1 | AD | | B | Transistor (2SC2412KR) | [Q9] |
| 39 | VS2SC2412KR-1 | AD | | B | Transistor (2SC2412KR) | [Q10] |
| 40 | VRD-HT2HY200J | AA | | C | Resistor (1/2W 20Ω ±5%) | [R1] |
| 41 | VRS-HT3AA560J | AA | | C | Resistor (1W 56Ω ±5%) | [R2(AT)] |
| | VRS-HT3AA220J | AA | | C | Resistor (1W 22Ω ±5%) | [R2(PT)] |
| 42 | VRS-TS2AD332J | AA | | C | Resistor (1/10W 3.3KΩ ±5%) | [R3] |
| 43 | VRS-TS2AD683J | AA | | C | Resistor (1/10W 68KΩ ±5%) | [R4] |

## 8 TEL-Liu PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 44 | VRS-TS2AD104J | AA | | C | Resistor (1/10W 100KΩ ±5%) | [R5] |
| 45 | VRS-TS2AD303J | AA | | C | Resistor (1/10W 30KΩ ±5%) | [R7(AT)] |
| | VRS-TS2AD243J | AA | | C | Resistor (1/10W 24KΩ ±5%) | [R7(PT)] |
| 46 | VRS-TS2AD104J | AA | | C | Resistor (1/10W 100KΩ ±5%) | [R8] |
| 47 | VRS-TS2AD621J | AA | | C | Resistor (1/10W 620Ω ±5%) | [R9] |
| 48 | VRS-TS2AD391J | AA | | C | Resistor (1/10W 390Ω ±5%) | [R10] |
| 49 | VRS-TS2AD204J | AA | | C | Resistor (1/10W 200KΩ ±5%) | [R11(AT)] |
| | VRS-TS2AD224J | AA | | C | Resistor (1/10W 220KΩ ±5%) | [R11(PT)] |
| 50 | VRS-TS2AD683J | AA | | C | Resistor (1/10W 68KΩ ±5%) | [R12] |
| 51 | VRS-TS2AD2R2J | AA | | C | Resistor (1/10W 2.2Ω ±5%) | [R13] |
| 52 | VRS-TS2AD105J | AA | | C | Resistor (1/10W 1.0MΩ ±5%) | [R14] |
| 53 | VRS-TS2AD474J | AA | | C | Resistor (1/10W 470KΩ ±5%) | [R15] |
| 54 | VRS-TS2AD474J | AA | | C | Resistor (1/10W 470KΩ ±5%) | [R16] |
| 55 | VRS-TS2AD121J | AA | | C | Resistor (1/10W 120Ω ±5%) | [R17(AT)] |
| | VRS-TS2AD201J | AG | | C | Resistor (1/10W 200Ω ±5%) | [R17(PT)] |
| 56 | VRS-TS2AD392J | AA | | C | Resistor (1/10W 3.9KΩ ±5%) | [R18] |
| 57 | VRS-TS2AD105J | AA | | C | Resistor (1/10W 1.0MΩ ±5%) | [R19] |
| 58 | VRS-TS2AD105J | AA | | C | Resistor (1/10W 1.0MΩ ±5%) | [R20] |
| 59 | VRS-TS2AD683J | AA | | C | Resistor (1/10W 68KΩ ±5%) | [R21] |
| 60 | VRS-TS2AD222J | AA | | C | Resistor (1/10W 2.2KΩ ±5%) | [R22] |
| 61 | VRS-TS2AD104J | AA | | C | Resistor (1/10W 100KΩ ±5%) | [R23] |
| 62 | VRS-TS2AD104J | AA | | C | Resistor (1/10W 100KΩ ±5%) | [R24] |
| 63 | VRS-TS2AD105J | AA | | C | Resistor (1/10W 1.0MΩ ±5%) | [R26] |
| 64 | VRS-TS2AD474J | AA | | C | Resistor (1/10W 470KΩ ±5%) | [R27] |
| 65 | VRS-TS2AD124J | AA | | C | Resistor (1/10W 120KΩ ±5%) | [R28(PT)] |
| 66 | VRS-TS2AD474J | AA | | C | Resistor (1/10W 470KΩ ±5%) | [R29] |
| 67 | VRS-TS2AD301J | AA | | C | Resistor (1/10W 300Ω ±5%) | [R30] |
| 68 | VRS-TS2AD474J | AA | | C | Resistor (1/10W 470KΩ ±5%) | [R31] |
| 69 | VRS-TS2AD101J | AA | | C | Resistor (1/10W 100Ω ±5%) | [R32] |
| 70 | VRS-TS2AD273J | AA | | C | Resister (1/10W 27KΩ ±5%) | [R33] |
| 71 | VRS-TS2AD105J | AA | | C | Resistor (1/10W 1.0MΩ ±5%) | [R34] |
| 72 | VRS-TS2AD133J | AA | | C | Resistor (1/10W 13KΩ ±5%) | [R35] |
| 73 | VRS-TS2AD683J | AA | | C | Resistor (1/10W 68KΩ ±5%) | [R36] |
| 74 | VRS-TS2AD133J | AA | | C | Resistor (1/10W 13KΩ ±5%) | [R37] |
| 75 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R38(AT)] |
| | VRS-TS2AD821J | AA | | C | Resistor (1/10W 820Ω ±5%) | [R38(PT)] |
| 76 | VRSTS2AD3651F | AA | | C | Resistor (1/10W 3.65KΩ ±1%) | [R39] |
| 77 | VRS-TS2AD511J | AA | | C | Resistor (1/10W 510Ω ±5%) | [R40(AT)] |
| | VRS-TS2AD102J | AA | | C | Resistor (1/10W 1KΩ ±5%) | [R40(PT)] |
| 78 | VRS-TS2AD122J | AA | | C | Resistor (1/10W 1.2KΩ ±5%) | [R41] |
| 79 | VRS-TS2AD133J | AA | | C | Resistor (1/10W 13KΩ ±5%) | [R42(AT)] |
| | VRS-TS2AD153J | AA | | C | Resistor (1/10W 15KΩ ±5%) | [R42(PT)] |
| 80 | VRS-TS2AD511J | AA | | C | Resistor (1/10W 510Ω ±5%) | [R43(AT)] |
| | VRS-TS2AD102J | AA | | C | Resistor (1/10W 1KΩ ±5%) | [R43(PT)] |
| 81 | VRS-TS2AD513J | AA | | C | Resistor (1/10W 51KΩ ±5%) | [R44] |
| 82 | VRS-TS2AD391J | AA | | C | Resistor (1/10W 390Ω ±5%) | [R45] |
| 83 | VRS-TS2AD134J | AA | | C | Resistor (1/10W 130KΩ ±5%) | [R46] |
| 84 | VRS-TS2AD183J | AA | | C | Resister (1/10W 18KΩ ±5%) | [R47] |
| 85 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R48(PT)] |
| 86 | VHEMTZ3R0A/-1 | AA | | B | Zener diode (MTZ3R0A) | [ZD1] |
| 87 | VHEMTZ5R6B/-1 | AB | | B | Zener diode (MTZ5R6B) | [ZD2] |
| 88 | VHEHZ8.2BP/-1 | AC | | B | Zener diode (HZ8.2BP) | [ZD3] |
| 89 | VHEMTZ100B/-1 | AA | | B | Zener diode (MTZ100B) | [ZD4] |
| ⚠ 301 | RATTT2006SCZZ | AL | | B | Arrestor (3P-01) | [AR1] |
| 302 | QTANZ2042SCZZ | AB | | C | Terminal (M1902-A) | [ARG] |
| 303 | RALMB2007SCZZ | AG | | B | Buzzer (KBT-33SB-2T-2) | [BZ1] |
| 304 | VCEAEA1AW227M | AB | | C | Capacitor (10WV 220μF) | [C1] |
| 305 | VCEAEU1CW107M | AB | | C | Capacitor (16WV 100μF) | [C2] |
| 306 | RC-EZ105NSC1H | AC | | C | Capacitor (50WV 1μF) | [C3] |
| 307 | VCEAEU1HW105M | AA | | C | Capacitor (50WV 1.0μF) | [C4] |
| 308 | RC-EZ105NSC1H | AC | | C | Capacitor (50WV 1μF) | [C7] |
| 309 | VCEAEA1HW335M | AA | | C | Capacitor (50WV 3.3μF) | [C8] |
| 310 | VCEAEU1EW106M | AA | | C | Capacitor (25WV 10μF) | [C9] |
| 311 | VCEAEU1EW106M | AA | | C | Capacitor (25WV 10μF) | [C11] |
| 312 | VCEAEU1EW106M | AA | | C | Capacitor (25WV 10μF) | [C12] |
| 313 | VCQYNA1HM153K | AB | | C | Capacitor (50WV 0.015μF) | [C13(AT)] |
| | VCQYNA1HM682K | AA | | C | Capacitor (50WV 6800PF) | [C13(PT)] |
| 314 | VCEAEA1EW476M | AB | | C | Capacitor (25WV 47μF) | [C16] |
| 315 | VCEAEA1EW476M | AB | | C | Capacitor (25WV 47μF) | [C17] |
| 316 | VCEAEA1EW476M | AB | | C | Capacitor (25WV 47μF) | [C18] |
| 317 | VCQYNA1HM334K | AD | | C | Capacitor (50WV 0.33μF) | [C21(AT)] |
| 318 | VCFYJU2EA474K | AD | | C | Capacitor (250WV 0.47μF) | [C22(AT)] |
| | VCFYJU2EA104K | AC | | C | Capacitor (50WV 6800PF) | [C22(PT)] |
| 319 | VCFYJU2EA105K | AE | | C | Capacitor (250WV 1μF) | [C23(AT)] |
| | VCFYJU2EA224K | AD | | C | Capacitor (250WV 0.22μF) | [C23(PT)] |
| 320 | VCEAEA1HW106M | AA | | C | Capacitor (50WV 10μF) | [C24(AT)] |
| | VCEAEU1HW475M | AA | | C | Capacitor (50WV 4.7μF) | [C24(PT)] |
| 321 | VCFYJU2EA225K | AG | | C | Capacitor (250WV 2.2μF) | [C26(AT)] |
| | VCFYJU2EA155K | AF | | C | Capacitor (250WV 1.5μF) | [C26(PT)] |
| 322 | RC-EZ107VSC1C | AC | | C | Capacitor (16WV 100μF) | [C27(AT)] |

## 8 TEL-Liu PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 323 | VCKYTV1HB392K | AA | | C | Capacitor (50WV 3900PF) | [C101] |
| 324 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C102] |
| 325 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C103] |
| 326 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C104] |
| 327 | VCCCTV1HH121J | AA | | C | Capacitor (50WV 120PF) | [C105] |
| 328 | VCKYTV1HB473K | AA | | C | Capacitor (50WV 0.047μF) | [C107] |
| 329 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C108] |
| 330 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C109] |
| 331 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C110] |
| 332 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C111] |
| 333 | VCKYTV1HB331K | AA | | C | Capacitor (50WV 330PF) | [C112] |
| 334 | VCKYTV1HB102K | AA | | C | Capacitor (50WV 1000PF) | [C113] |
| 335 | VCCCTV1HH300J | AA | | C | Capacitor (50WV 30PF) | [C114] |
| 336 | VCCCTV1HH300J | AA | | C | Capacitor (50WV 30PF) | [C115] |
| 337 | VCKYTQ1HB104K | AB | | C | Capacitor (50WV 0.10μF) | [C116] |
| 338 | VCKYTV1HB681K | AA | | C | Capacitor (50WV 680PF) | [C117(AT)] |
| | VCKYTV1HB182K | AA | | C | Capacitor (50WV 1800PF) | [C117(PT)] |
| 339 | VCKYTV1HB123K | AA | | C | Capacitor (50WV 0.012μF) | [C118] |
| 340 | VCKYTV1HB102K | AA | | C | Capacitor (50WV 1000PF) | [C119] |
| 341 | VCKYTV1HF223Z | AA | | C | Capacitor (50WV 0.022μF) | [C121] |
| 342 | VCKYTV1HB102K | AA | | C | Capacitor (50WV 1000PF) | [C122] |
| 343 | VCKYTV1HB153K | AA | | C | Capacitor (50WV 0.015μF) | [C123(PT)] |
| 344 | VCKYTV1HB472K | AA | | C | Capacitor (50WV 4700PF) | [C124(PT)] |
| 345 | VCKYTV1HB681K | AA | | C | Capacitor (50WV 680PF) | [C125(PT)] |
| 346 | VCKYTV1HF223Z | AA | | C | Capacitor (50WV 0.022μF) | [C126] |
| 347 | VCKYTV1HB472K | AA | | C | Capacitor (50WV 4700PF) | [C127(PT)] |
| 348 | VCKYTV1HB153K | AA | | C | Capacitor (50WV 0.015μF) | [C128(PT)] |
| 349 | VCKYTV1HB681K | AA | | C | Capacitor (50WV 680PF) | [C129(PT)] |
| 350 | VCKYTV1HB821K | AA | | C | Capacitor (50WV 820PF) | [C130] |
| 351 | VCKYTV1HF223Z | AA | | C | Capacitor (50WV 0.022μF) | [C132] |
| 352 | VCKYTV1HB681K | AA | | C | Capacitor (50WV 680PF) | [C133] |
| 353 | VCKYTV1HB822K | AA | | C | Capacitor (50WV 8200PF) | [C134] |
| 354 | VCKYTV1HF223Z | AA | | C | Capacitor (50WV 0.022μF) | [C135] |
| 355 | VCKYTV1HB102K | AA | | C | Capacitor (50WV 1000PF) | [C136] |
| 356 | VCKYTV1HF223Z | AA | | C | Capacitor (50WV 0.022μF) | [C137] |
| 357 | VCKYTV1HF223Z | AA | | C | Capacitor (50WV 0.022μF) | [C138] |
| 358 | QJAKZ2029SC0D | AD | | C | Connector (4pin) | [CNHJ] |
| 359 | QCNCM7014SC0B | AD | | B | Connector (2pin) | [CNLED] |
| 360 | QCNCW2436SC5J | AB | | C | Connector (50pin) | [CNLIU] |
| 361 | QJAKZ2043SCFD | AG | | C | Jack | [CNLJ] |
| 362 | QCNCM2401SC0H | AC | | C | Capacitor (8pin) | [CNPH] |
| 363 | QCNCM7014SC0C | AA | | C | Connector (3pin) | [CNPS] |
| 364 | QCNCM886JAFZZ | AD | | C | Connector (9pin) | [CNPW] |
| 365 | QCNCM2401SC0B | AA | | B | Connector (2pin) | [CNSP] |
| 366 | QCNCM7014SC1C | AC | | C | Connector (13pin) | [CNTH] |
| 367 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D1] |
| 368 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D2] |
| 369 | VHD1SS82///-1 | AB | | B | Diode (1SS82) | [D3] |
| 370 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D4] |
| 371 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D5] |
| 372 | VHDDSS133//-1 | AA | | B | Diode (DSS133) | [D6] |
| 373 | VHDDSS131//-1 | AA | | B | Diode (DSS131) | [D7] |
| 374 | VHDSD103///-1 | AD | | B | Diode (SD103) | [D8] |
| 375 | VHiS7235A//-1 | AN | | B | IC (S7235A) | [IC2] |
| 376 | VHiBU4066B/-1 | AD | | B | IC (BU4066B) | [IC3] |
| 377 | VHiULN2003AN/ | AE | | B | IC (ULN2003AN) | [IC4] |
| 378 | VHiNJU4053D-1 | AF | | B | IC (NJU4053D) | [IC5] |
| 379 | VHiMC34119/-1 | AF | | B | IC (MC34119) | [IC6] |
| 380 | VHiNJM4558D-1 | AN | | B | IC (NJM4558D) | [IC7] |
| 381 | VHiNJM4558D-1 | AN | | B | IC (NJM4558D) | [IC8] |
| 382 | VHiBA10393//1 | AD | | B | IC (BA10393) | [IC9] |
| 383 | VHiULN2003AN/ | AE | | B | IC (ULN2003AN) | [IC10] |
| 384 | VHiNJM4558D-1 | AN | | B | IC (NJM4558D) | [IC11(PT)] |
| 385 | VHiMC34012-1P | AF | | B | IC (MC34012) | [IC13] |
| ⚠ 386 | VHiTHS56///-1 | AN | | B | IC (THS56) | [IC14] |
| ⚠ 387 | VHiTHS56///-1 | AN | | B | IC (THS56) | [IC15] |
| 388 | VHiNJM4558D-1 | AN | | B | IC (NJM4558D) | [IC17] |
| 389 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP1] |
| 390 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP2] |
| 391 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP3] |
| 392 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP5] |
| 393 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP7] |
| 394 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP10(PT)] |
| 395 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP11(AT)] |
| 396 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP12] |
| 397 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP15] |
| 398 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP16(PT)] |
| 399 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP17(AT)] |
| 400 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP18(AT)] |
| 401 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP19(AT)] |

## [8] TEL-Liu PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 402 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP20(AT)] |
| 403 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP21] |
| 404 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP23] |
| 405 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [JP25] |
| 406 | RCiLL0145AFZZ | AF | | C | Coil (SBT-0180W) | [L2] |
| 407 | RCiLL0145AFZZ | AF | | C | Coil (SBT-0180W) | [L3] |
| 408 | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [L5] |
| 409 | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [L6] |
| 410 | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [L7] |
| 411 | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [L8] |
| 412 | RFiLN2013SCZZ | AG | | C | Filter (CHC1307TR) | [L16] |
| 413 | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [L17] |
| 414 | RCiLL0145AFZZ | AF | | C | Coil (SBT-0180W) | [L18] |
| 415 | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [L19] |
| ⚠ 416 | VHPPC817C//-1 | AE | | B | Photo coupler (PC817C) | [PC3] |
| 417 | VHGP1S58V//-1 | AE | | B | Photo interrupter (GP1S58V) | [PC4] |
| 418 | VHGP1S58V//-1 | AE | | B | Photo interrupter (GP1S58V) | [PC5] |
| ⚠ 419 | VHPPC817C//-1 | AE | | B | Photo coupler (PC817C) | [PC6] |
| ⚠ 420 | VHPPC817C//-1 | AE | | B | Photo coupler (PC817C) | [PC7] |
| ⚠ 421 | VHPPC847///-1 | AM | | B | Photo coupler (PC847) | [PC8] |
| ⚠ 422 | VHPPC817D//-1 | AD | | B | Photo coupler (PC817D) | [PC9] |
| ⚠ 423 | VHPPC852///-1 | AE | | B | Photo coupler (PC852) | [PC10] |
| 424 | VSBS108////-1 | AE | | B | Transistor (BS108) | [Q2] |
| 425 | VS2SC2412KR-1 | AD | | B | Transistor (2SC2412KR) | [Q101] |
| 426 | VS2SA1037KS-1 | AB | | B | Transistor (2SA1037KS) | [Q102] |
| 427 | VRD-HT2EY431J | AA | | C | Resistor (1/4W 430Ω ±5%) | [R1] |
| 428 | VRD-HT2EY681J | AA | | C | Resistor (1/4W 680Ω ±5%) | [R2(AT)] |
| | VRD-HT2EY561J | AA | | C | Resistor (1/4W 560Ω ±5%) | [R2(PT)] |
| 429 | VRD-HT2EY472J | AA | | C | Resistor (1/4W 4.7KΩ ±5%) | [R3(AT)] |
| 430 | VRD-HT2EY203J | AA | | C | Resistor (1/4W 20KΩ ±5%) | [R4(AT)] |
| 431 | VRD-HT2HY150J | AA | | C | Resistor (1/2W 15Ω ±5%) | [R5] |
| 432 | VRS-HT3DA221J | AB | | C | Resistor (2W 220Ω ±5%) | [R6(AT)] |
| 433 | VRS-HT3AA222J | AA | | C | Resistor (1W 2.2KΩ ±5%) | [R7] |
| 434 | VRS-HT3DA750J | AA | | C | Resistor (2W 75Ω ±5%) | [R8(PT)] |
| 435 | VRS-HT3DA750J | AA | | C | Resistor (2W 75Ω ±5%) | [R10(AT)] |
| | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [R10(PT)] |
| 436 | VRD-HT2HY150J | AA | | C | Resistor (1/2W 15Ω ±5%) | [R11] |
| 437 | VRD-HT2EY513J | AA | | C | Resistor (1/4W 51KΩ ±5%) | [R13(AT)] |
| 438 | VRS-HT3AA103J | AA | | C | Resistor (1W 10KΩ ±5%) | [R14(AT)] |
| | VRS-HT3AA473J | AA | | C | Resistor (1W 47KΩ ±5%) | [R14(PT)] |
| 439 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R104] |
| 440 | VRS-TS2AD104J | AA | | C | Resistor (1/10W 100KΩ ±5%) | [R105] |
| 441 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R106] |
| 442 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R107] |
| 443 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R108] |
| 444 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R109] |
| 445 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R110] |
| 446 | VRS-TS2AD302J | AA | | C | Resistor (1/10W 3.0KΩ ±5%) | [R112] |
| 447 | VRS-TS2AD753J | AA | | C | Resistor (1/10W 75KΩ ±5%) | [R113] |
| 448 | VRS-TS2AD221J | AA | | C | Resistor (1/10W 220Ω ±5%) | [R114] |
| 449 | VRS-TS2AD221J | AA | | C | Resistor (1/10W 220Ω ±5%) | [R115] |
| 450 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R116] |
| 451 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R117] |
| 452 | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R118(AT)] |
| | VRS-TS2AD163J | AA | | C | Resistor (1/10W 16KΩ ±5%) | [R118(PT)] |
| 453 | VRS-TS2AD223J | AA | | C | Resistor (1/10W 22KΩ ±5%) | [R119(AT)] |
| | VRS-TS2AD183J | AA | | C | Resister (1/10W 18KΩ ±5%) | [R119(PT)] |
| 454 | VRS-TS2AD102J | AA | | C | Resistor (1/10W 1KΩ ±5%) | [R120] |
| 455 | VRS-TS2AD513J | AA | | C | Resistor (1/10W 51KΩ ±5%) | [R121(AT)] |
| | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R121(PT)] |
| 456 | VRS-TS2AD362J | AA | | C | Resistor (1/10W 3.6KΩ ±5%) | [R122] |
| 457 | VRS-TS2AD472J | AA | | C | Resistor (1/10W 4.7KΩ ±5%) | [R123] |
| 458 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R124] |
| 459 | VRS-TS2AD472J | AA | | C | Resistor (1/10W 4.7KΩ ±5%) | [R125] |
| 460 | VRS-TS2AD225J | AA | | C | Resistor (1/10W 2.2MΩ ±5%) | [R126] |
| 461 | VRS-TS2AD225J | AA | | C | Resistor (1/10W 2.2MΩ ±5%) | [R127] |
| 462 | VRS-TS2AD152J | AA | | C | Resistor (1/10W 1.5KΩ ±5%) | [R128(AT)] |
| | VRS-TS2AD821J | AA | | C | Resistor (1/10W 820Ω ±5%) | [R128(PT)] |
| 463 | VRS-TS2AD154J | AA | | C | Resistor (1/10W 150KΩ ±5%) | [R129(AT)] |
| | VRS-TS2AD753J | AA | | C | Resistor (1/10W 75KΩ ±5%) | [R129(PT)] |
| 464 | VRS-TS2AD163J | AA | | C | Resistor (1/10W 16KΩ ±5%) | [R130] |
| 465 | VRS-TS2AD133J | AA | | C | Resistor (1/10W 13KΩ ±5%) | [R131] |
| 466 | VRS-TS2AD823J | AA | | C | Resistor (1/10W 82KΩ ±5%) | [R132] |
| 467 | VRS-TS2AD683J | AA | | C | Resistor (1/10W 68KΩ ±5%) | [R133] |
| 468 | VRS-TS2AD153J | AA | | C | Resistor (1/10W 15KΩ ±5%) | [R134] |
| 469 | VRS-TS2AD394J | AA | | C | Resistor (1/10W 390KΩ ±5%) | [R135] |
| 470 | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R136] |
| 471 | VRS-TS2AD105J | AA | | C | Resistor (1/10W 1.0MΩ ±5%) | [R137] |
| 472 | VRS-TS2AD105J | AA | | C | Resistor (1/10W 1.0MΩ ±5%) | [R138] |
| 473 | VRS-TS2AD223J | AA | | C | Resistor (1/10W 22KΩ ±5%) | [R139] |

## 8 TEL-Liu PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 474 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R140(PT)] |
| 475 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R141(PT)] |
| 476 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R142(PT)] |
| 477 | VRS-TS2AD471J | AA | | C | Resistor (1/10W 470Ω ±5%) | [R143] |
| 478 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R145] |
| 479 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R147(PT)] |
| 480 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R148(PT)] |
| 481 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R149(PT)] |
| 482 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R150] |
| 483 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R151] |
| 484 | VRS-TS2AD333J | AA | | C | Resistor (1/10W 33KΩ ±5%) | [R153(AT)] |
| | VRS-TS2AD822J | AA | | C | Resistor (1/10W 8.2KΩ ±5%) | [R153(PT)] |
| 485 | VRS-TS2AD822J | AA | | C | Resistor (1/10W 8.2KΩ ±5%) | [R154(AT)] |
| | VRS-TS2AD392J | AA | | C | Resistor (1/10W 3.9KΩ ±5%) | [R154(PT)] |
| 486 | VRS-TS2AD164J | AA | | C | Resistor (1/10W 160KΩ ±5%) | [R157] |
| 487 | VRS-TS2AD392J | AA | | C | Resistor (1/10W 3.9KΩ ±5%) | [R158(AT)] |
| | VRS-TS2AD472J | AA | | C | Resistor (1/10W 4.7KΩ ±5%) | [R158(PT)] |
| 488 | VRS-TS2AD685J | AA | | C | Resistor (1/10W 6.8MΩ ±5%) | [R160] |
| 489 | VRS-TS2AD000J | AA | | C | Resistor (1/10W 0Ω ±5%) | [R161] |
| 490 | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R162] |
| 491 | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R163] |
| 492 | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R164] |
| 493 | VRS-TS2AD622J | AA | | C | Resistor (1/10W 6.2KΩ ±5%) | [R165] |
| 494 | VRS-TS2AD333J | AA | | C | Resistor (1/10W 33KΩ ±5%) | [R166] |
| 495 | VRS-TS2AD101J | AA | | C | Resistor (1/10W 100Ω ±5%) | [R167] |
| 496 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R168(AT)] |
| | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R168(PT)] |
| 497 | VRS-TS2AD203J | AA | | C | Resistor (1/10W 20KΩ ±5%) | [R169] |
| 498 | VRS-TS2AD103J | AA | | C | Resistor (1/10W 10KΩ ±5%) | [R170] |
| 499 | VRS-TS2AD133J | AA | | C | Resistor (1/10W 13KΩ ±5%) | [R171] |
| 500 | VHDS1ZB60//-1 | AC | | B | Diode (S1ZB60) | [REC1] |
| 501 | VHDS1ZB60//-1 | AC | | B | Diode (S1ZB60) | [REC2] |
| 502 | VHDS1ZB60//-1 | AC | | B | Diode (S1ZB60) | [REC3] |
| ⚠ 503 | RRLYD3127QCZZ | AH | | B | Relay (JS1AF-24V) | [RY1] |
| ⚠ 504 | RRLYD3421SCZZ | AM | | B | Relay (RY24WZ-K-463) | [RY3] |
| ⚠ 505 | RRLYZ3423QCZZ | AL | | B | Relay (RY307-K) | [RY4] |
| ⚠ 506 | RRLYD3421SCZZ | AM | | B | Relay (RY24WZ-K-463) | [RY5] |
| 507 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [SP1] |
| 508 | VRD-HT2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [SP2] |
| 509 | QSW-S2166SC03 | AC | | B | Slide switch (HSW-1071-01-200) | [SW1] |
| 510 | QSW-S2166SC02 | AC | | B | Slide switch (HSW-1070-01-200) | [SW2] |
| 511 | QSW-M2184SCZZ | AD | | B | Microswitch (MSS-10A-6) | [SW3] |
| 512 | QSW-Z2186SCZZ | AH | | B | Switch (SPPY43) | [SW4] |
| 513 | RTRNZ2140XHZZ | AN | | B | Transformer (Z2140) | [T1(AT)] |
| ⚠ 514 | RTRNi2142XHZZ | BX | | B | Transformer (I2182) | [T2] |
| 515 | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [TP4] |
| 516 | VHVENC101D05A | AB | | B | Varistor (ERZC10D05A) | [VA1] |
| 517 | RVR-Q1402QCZZ | AD | | B | Variable resistor (RS10M11AJ)(10KΩ) | [VR1] |
| 518 | RVR-M141ASCZZ | AH | | B | Volume (10KΩ) | [VR2(AT)] |
| | VRD-RC2EY000J | AA | | C | Resistor (1/4W 0Ω ±5%) | [VR2(PT)] |
| 519 | RCRM-0091AFZZ | AE | | B | Crystal (CSA3.58MG) | [X1] |
| 520 | VHEMTZ5R6C/-1 | AA | | B | Zener diode (MTZ5R6C) | [ZD1] |
| 521 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD2] |
| 522 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD3] |
| 523 | VHEMTZ5R1C/-1 | AA | | B | Zener diode (MTZ5R1C) | [ZD4] |
| 524 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD5] |
| 525 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD6] |
| 526 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD7(AT)] |
| 527 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD8(AT)] |
| 528 | VHEMTZ300B/-1 | AA | | B | Zener diode (MTZ300B) | [ZD9] |
| 529 | VHEMTZ6R8B/-1 | AB | | B | Zener diode (MTZ6R8B) | [ZD10] |
| 530 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD11(AT)] |
| 531 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD12(AT)] |
| 532 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD13] |
| 533 | VHEHZS3B1//-1 | AC | | B | Zener diode (HZS3B1) | [ZD14] |
| 534 | VHEMTZ300B/-1 | AA | | B | Zener diode (MTZ300B) | [ZD15] |
| 535 | VHEMTZ5R1C/-1 | AA | | B | Zener diode (MTZ5R1C) | [ZD16] |
| 536 | QCNW-3624XH25 | AE | | C | Jumper wire (25mm) | |
| | (Unit) | | | | | |
| 901 | ——— | | | | Speech PWB unit (№1~89) | |
| 902 | CPWBF2659FF04 | CB | | E | TEL-Liu PWB unit (Include №901) | [AT] |
| | CPWBF2659FF13 | CB | | E | TEL-Liu PWB unit (Include №901) | [PT] |

## 9 Power supply PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 1 | 0CB829820363/ | BC | | B | Transformer | [T1] |
| 2 | 0CBUKZ0582ZZ/ | AH | | C | Filter | [L1,2] |
| 3 | 0CBPZZ0604ZZ/ | AC | | C | Jumping wire (IPS-3002-4) | [FB1] |
| 4 | 0CBBFZ8915 4Z/ | AC | | C | Ferrite core (BL01RN1-A62B1) | [FB2] |
| 5 | 0CBUCC0013DZ/ | AM | | B | IC (UPC78N12H) | [IC1] |
| 6 | 0CBUCC0010FZ/ | AC | | B | IC (NJM79L12A) | [IC2] |
| 7 | 0CBUCB0112AZ/ | AK | | B | IC | [IC3] |
| 8 | 0CBUAG0091AZ/ | AQ | | B | FET (2SK1601) | [Q1] |
| 9 | 0CBUAC0056BZ/ | AD | | B | Transistor (2SC2002-L) | [Q2] |
| 10 | 0CBUAC0027CZ/ | AG | | B | Transistor (2SC2655-Y) | [Q3] |
| 11 | 0CBUAC0004DZ/ | AC | | B | Transistor (2SC945-PA) | [Q4] |
| 12 | 0CBUBB0178DZ/ | AG | | B | Diode (D2SBA60) | [D1] |
| 13 | 0CBUBC0220BZ/ | AD | | B | Diode (1NU41) | [D2] |
| 14 | VHD1N4148//-1 | AA | | B | Diode (1SS55) | [D3] |
| 15 | 0CBUBC0221AZ/ | AC | | B | Diode (ERA18-02) | [D4,5] |
| 16 | 0CBUBC0280BZ/ | AC | | B | Diode | [D6] |
| 17 | 0CBUBB0187AZ/ | AG | | B | Diode (D10LC20U) | [D7] |
| 18 | 0CBUBDAC270D/ | AC | | B | Zener diode (RD27ESAB3) | [ZD1] |
| 19 | 0CBUBDAA3R0C/ | AC | | C | Zener diode (RD3.0EB2) | [ZD2] |
| 20 | 0CBUBDAE150B/ | AD | | B | Zener diode (RD15FB1) | [ZD3] |
| 21 | 0CBUBDAA6R2C/ | AC | | B | Zener diode (RD6.2EB2) | [ZD4] |
| 22 | 0CBUBDAE300D/ | AD | | B | Zener diode (RD30FB3) | [ZD5] |
| 23 | 0CBUDC0139AZ/ | AN | | B | Photo coupler (PC113Y11) | [PC1] |
| 24 | 0CBUEFC564BA/ | AC | | C | Metal film resistor (SFR25H560K(52)) | [R1] |
| 25 | 0CBUEEC474BG/ | AB | | C | Carbon resistor (RDF1/2PS474J) | [R2] |
| 26 | 0CBUEFER33CH/ | AC | | C | Metal film resistor | [R3] |
| 27 | 0CBUEEB223BA/ | AC | | C | Resistor (R1/4PS223J) | [R4] |
| 28 | 0CBUEEB564BA/ | AA | | C | Carbon resistor (R1/4PS564J) | [R5,6] |
| 29 | 0CBUEFE823CG/ | AC | | C | Metal film resistor (RSS2823J) | [R7,17] |
| 30 | 0CBUEFE391CL/ | AC | | C | Metal film resistor (RSS2-L15-391J) | [R8] |
| 31 | 0CBUEEB471BA/ | AC | | C | Carbon resistor (R1/4PS471J) | [R9] |
| 32 | 0CBUEEB330BM/ | AA | | C | Carbon resistor (F20R-02J330) | [R10] |
| 33 | 0CBUEFD561AU/ | AC | | C | Metal film resistor (RS1F561J) | [R11] |
| 34 | 0CBUEEB222BA/ | AC | | C | Carbon resistor (1/4W 2.2KΩ ±5%) | [R12] |
| 35 | 0CBUEEB271BA/ | AA | | C | Resistor (R1/4PS271J) | [R13] |
| 36 | 0CBUEEB822BA/ | AA | | C | Resistor (R1/4PS822J) | [R14] |
| 37 | 0CBUEEB272BA/ | AA | | C | Carbon resistor (R1/4PS272J) | [R15] |
| 38 | 0CBUEFF821BK/ | AC | | C | Metal film resistor (RSS3-L20-821J) | [R16] |
| 39 | 0CBUFBA102DC/ | AD | | B | Variable resistor (KVSF637AB102) | [VR1] |
| 40 | 0CBUGFZ224FY/ | AG | | C | Film capacitor (ECQ-U2A224MVA) | [C1,2] |
| 41 | 0CBUGCZ222CK/ | AF | | C | Ceramic capacitor (DE1410-1E222MACT4K-KD) | [C3,4] |
| 42 | 0CBUGBQ820BR/ | AP | | C | Block capacitor (LGQ2G820MHSZ) | [C5] |
| 43 | 0CBUGCU103BC/ | AD | | C | Ceramic capacitor (DE1307-1E103Z1K) | [C6] |
| 44 | 0CBUGCU471BQ/ | AE | | C | Ceramic capacitor (DE0705-1R471K1K-MHR) | [C7] |
| 45 | 0CBUGFF103ER/ | AC | | C | Capacitor (AMZF-103K50) | [C8] |
| 46 | 0CBUGFF683ER/ | AD | | C | Capacitor (AMZF-683K50) | [C9] |
| 47 | 0CBUGFF102ER/ | AC | | C | Capacitor (AMZF-102K50) | [C10,11] |
| 48 | 0CBUGCQ222AQ/ | AE | | C | Ceramic capacitor (DE7100-1F222MVA1-KC) | [C12,13] |
| 49 | 0CBUGAD390PR/ | AE | | C | Capacitor (LXF25VB39(M)FM-5) | [C14,15] |
| 50 | 0CBUGAD100HD/ | AC | | C | Capacitor (UVZ1E100MDH1AA) | [C16,17] |
| 51 | 0CBUGAC122GK/ | AG | | C | Capacitor (UPL1C122MRH1AA) | [C18] |
| 52 | 0CBUGAC221HD/ | AC | | C | Capacitor (UVZ1C221MEH1AA) | [C19] |
| 53 | 0CBUGCS222AP/ | AC | | C | Ceramic capacitor (DD08-63E222P500) | [C20] |
| 54 | 0CBUGAE122NS/ | AH | | C | Capacitor (LXF35VB1200(M)MC-12.5) | [C21] |
| 55 | 0CBUGAE221HD/ | AD | | C | Capacitor (UVZ1V221MPH1AA) | [C23] |
| 56 | 0CBUGCF104DS/ | AC | | C | Ceramic capacitor (DD308-63F104Z50) | [C24] |
| 57 | 0CBUERALE471/ | AF | | B | Varistor (ENC471D-07A) | [V1] |
| 58 | 0CBUZZ0100ZZ/ | AH | | B | Varistor (AG-10PC702R-L3N) | [V2] |
| 59 | 0CBPJCZZ0037/ | AG | | A | Current fuse (19181 1.25A) | [F1,2] |
| 60 | 0CBPJT0115ZZ/ | AF | | A | Thermal cutoff (U22 (115°C)) | [F3] |
| 61 | 0CBUDZ0052ZZ/ | AG | | B | Thermistor (M16007C) | [TH1] |
| 62 | 0CBPKZ0194ZZ/ | AC | | C | Connector (B2P3-VH) | [CN1] |
| 63 | 0CBPCZ0161ZZ/ | AF | | C | Connector (09R-FJ) | [CN2] |
| 64 | 0CBPCZ0160ZZ/ | AE | | C | Connector (M1698(MEP1698)) | [CN3-1] |
| 65 | 0CBPZZ0739ZZ/ | AE | | C | Bush (M1773(MOL1773)) | [CN3-2] |
| 66 | 0CBPFZ0242ZZ/ | AL | | B | Switch (SJ-W2R4A-30BB) | [SW1] |
| 67 | 0CBLRH0308ZQ/ | AM | | C | Heat sink (D2157-5001B EZS) | [MT1] |
| 68 | 0CBLRS0103ZZ/ | AC | | C | Supporter (SUP-103 SUS) | [MT2] |
| 69 | 0CBLRS0101ZZ/ | AC | | C | Supporter (SUP-101 SUS) | [MT3] |
| 70 | 0CBMRZ5068ZZ/ | AC | | C | Radiation sheet (45T-T0-220) | [RA1] |
| 71 | 0CBMRS0029ZZ/ | AG | | C | Radiation sheet (30T-55-24-A) | [RA2] |
| 72 | 0CBFBZ0098ZZ/ | AC | | C | Terminal (TM-12) | [O1] |
| | (Unit) | | | | | |
| ⚠ 901 | RDENT2071XH01 | BU | | E | Power supply PWB unit | |

## 10 CCD PWB unit

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION | |
|---|---|---|---|---|---|---|
| 1 | VCEAJA1EW226M | AB | | C | Capacitor (25WV 22μF) | [C1] |
| 2 | VCKYTQ1EF104Z | AA | | C | Capacitor (25WV 0.1μF) | [C2] |
| 3 | QCNW-4084XHZZ | AQ | | C | CCD cable | [CN1] |
| 4 | VHiTCD1206D-1 | AY | | B | IC (TCD1206D) | [IC1] |
| 5 | VS2SC2412KS-1 | AB | | B | Transistor (2SC2412KS) | [Q1] |
| 6 | VRS-TP2BD222J | AA | | C | Resistor (1/8W 2.2KΩ ±5%) | [R1] |
| 7 | VRS-TP2BD390J | AA | | C | Resistor (1/8W 39Ω ±5%) | [R2] |
| | (Unit) | | | | | |
| 901 | DCEKD281AXHZZ | BV | | E | CCD PWB unit | |

## 50 Hardware parts

| NO. | PARTS CODE | PRICE RANK | NEW MARK | PART RANK | DESCRIPTION |
|---|---|---|---|---|---|
| B1 | LX-BZ2138SCZZ | AA | | C | Screw (第2ロットマデ) |
| B2 | LX-BZ2182XHZZ | AB | | C | Screw |
| B3 | XBPSD30P06K00 | AA | | C | Screw (3×6K) |
| B4 | XBPSE30P08K00 | AA | | C | Screw (3×8K) |
| B5 | XBPSN40P06K00 | AA | | C | Screw (4×6K) |
| B6 | XEBSD30P06000 | AA | | C | Screw (3×6) |
| B7 | XEBSD30P08000 | AA | | C | Screw (M3×8) |
| B8 | XEBSF30P08000 | AA | | C | Screw (3×8) |
| B9 | XEBSE30P10000 | AA | | C | Screw (M3×10) |
| B10 | XEPSD26P06000 | AA | | C | Screw (2.6×6) |
| B11 | XHBSD30P05000 | AA | | C | Screw (3×5) |
| B12 | XEBSF30P10000 | AA | | C | Screw (3×10) |
| B13 | XJBSD20P04000 | AA | | C | Screw (2×4) |
| B14 | XUBSD20P06000 | AA | | C | Screw (2×6) |
| B15 | LX-BZ2189SCZZ | AB | | C | Screw |
| B16 | XEBSD30P10000 | AA | | C | Screw (M3×10) |
| B17 | XJPSD30P04000 | AA | | C | Screw (3×4) |
| B18 | LX-BZ2138XHZZ | AB | | C | Screw |
| B19 | XHBSD30P10000 | AA | | C | Screw (3×10) |
| W1 | LX-WZ2047XHZZ | AK | | C | Washer |
| W2 | LX-WZ2050XHZZ | AK | | C | Washer |
| W3 | LX-WZ2009SCZZ | AA | | C | Washer |

## ■ Index

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| [C] | | | | |
| CCABA2223XH13 | 1- 32 | BP | | E |
| // | 2-901 | BP | | E |
| CCABA2223XH15 | 1- 32 | BP | | E |
| // | 2-901 | BP | | E |
| CCNW-4085XH01 | 1- 33 | AW | | C |
| CCNW-4087XH01 | 3- 4 | AU | | C |
| CCNW-4088XH01 | 1- 24 | AY | | C |
| CPWBF2659FF04 | 1- 13 | CB | | E |
| // | 8-902 | CB | | E |
| CPWBF2659FF13 | 1- 13 | CB | | E |
| // | 8-902 | CB | | E |
| CPWBS2629FF05 | 1- 16 | BU | | E |
| // | 7-901 | BU | | E |
| [D] | | | | |
| DCEKD281AXHZZ | 5- 4 | BV | | E |
| // | 10-901 | BV | | E |
| DCEKP325AXHZZ | 2- 6 | BK | | E |
| DUNTK4996SC0G | 6- 4 | AX | | E |
| [G] | | | | |
| GCABA2223XHZC | 2- 9 | BA | | D |
| GCABA2223XHZD | 2- 9 | AV | | D |
| GCABB2224XHZC | 1- 37 | BK | | D |
| GCOVA2332XHZA | 1- 4 | AU | | D |
| GDAi-2062XHZD | 1- 3 | AZ | | D |
| GLEGG2058SCZA | 1- 19 | AD | | C |
| [H] | | | | |
| HPNLC2237SCZA | 2- 11 | AG | | D |
| HPNLC2237SCZZ | 2- 11 | AG | | D |
| [J] | | | | |
| JBTN-2086XHZA | 2- 2 | AQ | | C |
| JBTN-2087XHZA | 2- 5 | AP | | C |
| JBTN-2088XHZA | 2- 4 | AP | | C |
| JBTN-2106XHZC | 2- 3 | AD | | C |
| JBTN-2107XHZZ | 2- 1 | AG | | C |
| JKNBP2060XHZA | 1- 21 | AK | | C |
| [L] | | | | |
| LANGH2789XHZZ | 3- 6 | AX | | C |
| LBNDJ2003SCZZ | 1- 59 | AA | | C |
| LBNDJ2007SCZZ | 1- 38 | AA | | C |
| LBSHZ1100CCZZ | 1- 42 | AC | | C |
| LFRM-2147XHZZ | 5- 5 | AY | | C |
| LPLTG2593XHZZ | 3- 19 | AG | | C |
| LPLTM2653XHZB | 1- 18 | AT | | C |
| LPLTM2657XHZA | 1- 52 | AH | | C |
| LPLTM2658XHZZ | 1- 47 | AS | | C |
| LPLTM2665XHZZ | 4- 16 | AM | | C |
| LPLTM2669XHZZ | 1- 44 | AV | | C |
| LPLTP2649XHZZ | 1- 34 | AK | | C |
| LPLTP2650XHZA | 4- 15 | AK | | C |
| LPLTP2651XHZA | 4- 10 | AH | | C |
| LPLTP2655XHZZ | 4- 4 | AK | | C |
| LPLTP2656XHZZ | 6- 2 | AX | | C |
| LX-BZ2138SCZZ | 50-B1 | AA | | C |
| LX-BZ2138XHZZ | 50-B18 | AB | | C |
| LX-BZ2182XHZZ | 50-B2 | AB | | C |
| LX-BZ2189SCZZ | 50-B15 | AB | | C |
| LX-WZ2009SCZZ | 50-W3 | AA | | C |
| LX-WZ2047XHZZ | 50-W1 | AK | | C |
| LX-WZ2050XHZZ | 50-W2 | AK | | C |
| [M] | | | | |
| MLEVP2125XHZZ | 1- 27 | AE | | C |
| MLEVP2156XHYA | 1- 25 | AL | | C |
| MLEVP2157XHZZ | 3- 14 | AL | | C |
| MLEVP2167XHZZ | 1- 28 | AG | | C |
| MSPRC2536XHZZ | 4- 8 | AC | | C |
| MSPRC2537XHZZ | 4- 11 | AC | | C |
| MSPRC2544XHZZ | 1- 26 | AB | | C |
| MSPRC2550XHZZ | 1- 1 | AB | | C |
| MSPRC2620XHZA | 1- 31 | AN | | C |
| MSPRC2621XHZA | 1- 5 | AN | | C |
| MSPRC2641XHZZ | 2- 8 | AB | | C |
| MSPRP2512XHZZ | 5- 2 | AK | | C |
| MSPRP2535XHZZ | 1- 23 | AD | | C |
| MSPRP2539SCZA | 3- 20 | AE | | C |
| MSPRP2616SCZZ | 3- 8 | AC | | C |
| MSPRP2617XHZA | 3- 16 | AK | | C |
| MSPRP2618SCZZ | 5- 6 | AD | | C |
| MSPRP2619SCZZ | 5- 9 | AD | | C |
| MSPRT2540XHZZ | 1- 20 | AC | | C |
| MSPRT2622XHZZ | 3- 15 | AK | | C |
| [N] | | | | |
| NBRGP2138XHZZ | 1- 41 | AD | | C |
| NBRGP2141XHZZ | 3- 12 | AH | | C |
| NBRGP2154XHZZ | 1- 6 | AK | | C |
| NGERH2163XHZZ | 4- 12 | AK | | C |
| NGERH2197XHZZ | 4- 14 | AF | | C |
| NGERH2198XHZZ | 4- 7 | AE | | C |
| NGERH2199XHZZ | 4- 17 | AF | | C |
| NGERH2201XHZZ | 4- 6 | AE | | C |
| NGERH2202XHZZ | 4- 13 | AE | | C |
| NGERH2203XHZZ | 1- 8 | AE | | C |
| NGERH2204XHZZ | 1- 12 | AM | | C |
| NGERH2205XHZZ | 1- 10 | AD | | C |
| NGERH2207XHZZ | 3- 11 | AD | | C |
| NGERH2210XHZZ | 4- 5 | AC | | C |
| NGERP2206XHZZ | 2- 7 | AE | | C |
| NROLP2194XHZZ | 3- 17 | AC | | C |
| NROLP2249XHZZ | 1- 22 | AE | | C |
| NROLR2273XHZA | 1- 11 | AZ | | C |
| NROLR2274XHZZ | 1- 9 | AY | | C |
| NROLR2275XHZZ | 3- 13 | AY | | C |
| NROLR2276XHZZ | 1- 7 | BB | | C |
| NROLR2278XHZZ | 1- 45 | AR | | C |
| NSFTZ2228SCZZ | 3- 18 | AC | | C |
| [P] | | | | |
| PCUSS2072BTZZ | 6- 14 | AC | | C |
| PCUT-2030SCZA | 1- 51 | BB | | C |
| PGiDM2289SCZA | 1- 2 | AC | | C |
| PGiDP2384XHZA | 2- 10 | AR | | C |
| PGiDP2385XHZA | 2- 12 | AR | | C |
| PGiDP2386XHZB | 3- 9 | AS | | C |
| PGLSP2043XHZZ | 5- 10 | AK | | C |
| PGUMM2111XHZZ | 2- 14 | AD | | C |
| PHOP-2078XHZZ | 6- 13 | AV | | C |
| PLNS-2043XHZZ | 5- 3 | AU | | B |
| PMAGE2050SCZB | 4- 3 | AF | | B |
| PMiR-2061XHZZ | 5- 8 | AH | | C |
| PMiR-2062XHZZ | 5- 7 | AM | | C |
| PSHEZ2701XHZZ | 1- 57 | AQ | | C |
| PSHEZ2878XHZZ | 3- 5 | AK | | C |
| PSHEZ2879XHZZ | 5- 1 | AK | | C |
| PSHEZ2880XHZZ | 1- 39 | AK | | C |
| PSHEZ2906SCZZ | 2- 13 | AB | | C |
| PSHEZ2915XHZZ | 5- 13 | AY | | C |
| PSHEZ2923SCZZ | 1- 46 | AC | | C |
| PSHEZ2925XHZZ | 1- 17 | BU | | C |
| PSHEZ2943XHZZ | 3- 10 | AF | | C |
| PSPAZ2177XHZZ | 1- 43 | AK | | C |
| PTME-2036XHZA | 3- 1 | AK | | C |
| PTME-2037XHZZ | 3- 3 | AK | | C |
| PTME-2038XHZA | 4- 9 | AK | | C |
| PTME-2040XHZZ | 4- 18 | AK | | C |
| PTUBU2024SCZZ | 1- 53 | AB | | C |
| PTUBU2025SCZZ | 1- 54 | AB | | C |
| [Q] | | | | |
| QACCV662ASCZZ | 1- 14 | AW | | B |
| QCNCM2389SC2B | 7- 72 | AE | | C |
| QCNCM2401SC0B | 8- 365 | AA | | B |
| QCNCM2401SC0H | 8- 362 | AC | | C |
| QCNCM2436SC5J | 7- 69 | AB | | C |
| QCNCM7014SC0B | 7- 71 | AD | | B |
| // | 8- 359 | AD | | B |
| QCNCM7014SC0C | 8- 363 | AA | | C |
| QCNCM7014SC0D | 7- 68 | AB | | C |
| QCNCM7014SC0F | 7- 70 | AB | | C |
| QCNCM7014SC0G | 7- 67 | AB | | C |
| QCNCM7014SC1C | 8- 366 | AC | | C |
| QCNCM768VAFZZ | 8- 26 | AE | | C |
| QCNCM886JAFZZ | 8- 364 | AD | | C |
| QCNCW2436SC5J | 8- 360 | AB | | C |
| QCNW-3624XH25 | 8- 536 | AE | | C |
| QCNW-3976XH0G | 6- 6 | AT | | C |
| QCNW-4084XHZZ | 10- 3 | AQ | | C |
| QCNW-4100XHZZ | 3- 7 | AM | | C |
| QCNW-4106XHZZ | 4- 2 | AL | | C |
| QCNW-4111XHZZ | 5- 12 | AL | | C |
| QCNW-4113XHZZ | 1- 48 | AR | | C |
| QCNW-4114XHZZ | 1- 50 | AR | | C |
| QCNW-4140XHZZ | 1- 55 | BK | | C |
| QJAKZ2029SC0D | 8- 358 | AD | | C |
| QJAKZ2043SCFD | 8- 361 | AG | | C |
| QSOCZ2051SC32 | 7- 88 | AC | | C |
| QSW-D0237FCZZ | 7- 256 | AH | | B |
| QSW-M2184SCZZ | 8- 511 | AD | | B |
| QSW-S2166SC02 | 8- 510 | AC | | B |
| QSW-S2166SC03 | 8- 509 | AC | | B |
| QSW-Z2186SCZZ | 8- 512 | AH | | B |
| QTANZ2042SCZZ | 8- 302 | AB | | C |
| [R] | | | | |
| RALMB2007SCZZ | 8- 303 | AG | | B |
| RATTT2006SCZZ | 8- 301 | AL | | B |
| RC-EZ105NSC1H | 8- 306 | AC | | C |
| // | 8- 308 | AC | | C |
| RC-EZ107VSC1C | 8- 322 | AC | | C |
| RC-K1H224SCZZ | 7- 259 | AC | | C |
| RCiLL0145AFZZ | 8- 406 | AF | | C |
| // | 8- 407 | AF | | C |
| // | 8- 414 | AF | | C |
| RCiLZ1044CCZZ | 7- 99 | AC | | C |
| // | 7- 100 | AC | | C |
| // | 7- 101 | AC | | C |
| // | 7- 103 | AC | | C |
| // | 7- 104 | AC | | C |
| // | 7- 105 | AC | | C |
| // | 7- 106 | AC | | C |
| // | 7- 107 | AC | | C |
| // | 7- 132 | AC | | C |
| RCiLZ2104SCZZ | 7- 102 | AK | | C |
| RCiLZ5017SCZZ | 7- 97 | AB | | C |
| RCORF2063SCZZ | 1- 35 | AE | | C |
| RCORF2064SCZZ | 1- 36 | AE | | C |
| RCORF6658RCZZ | 1- 58 | AK | | C |
| RCRM-0091AFZZ | 8- 519 | AE | | B |
| RCRSP2080SCZZ | 7- 257 | AF | | B |
| RDENT2071XH01 | 1- 15 | BU | | E |
| // | 9- 901 | BU | | E |
| RFiLN2013SCZZ | 8- 412 | AG | | C |
| RHEDZ2041SCZZ | 3- 2 | BP | | B |
| RMOTZ2104SCZZ | 4- 1 | BM | | B |
| RR-XA02R0SC2E | 7- 112 | AC | | C |
| RRLYD3127QCZZ | 8- 503 | AH | | B |
| RRLYD3421SCZZ | 8- 504 | AM | | B |
| // | 8- 506 | AM | | B |
| RRLYZ3423QCZZ | 8- 505 | AL | | B |
| RTRNi2142XHZZ | 8- 514 | BX | | B |
| RTRNZ2140XHZZ | 8- 513 | AN | | B |
| RVR-M141ASCZZ | 8- 518 | AH | | B |
| RVR-Q1402QCZZ | 8- 517 | AD | | B |
| [S] | | | | |
| SPAKA4085BTZZ | 6- 3 | AH | | D |
| SPAKA4086BTZZ | 6- 9 | AH | | D |
| SPAKC4208BTZZ | 6- 1 | AL | | D |
| SPAKP3385SCZZ | 6- 5 | AG | | D |
| SSAKA0003HCZZ | 6- 10 | AA | | D |
| SSAKA3001CCZZ | 6- 8 | AA | | D |
| SSAKH3010CCZZ | 6- 10 | AA | | D |
| [T] | | | | |
| TiNSE3333BTZZ | 6- 12 | AQ | | D |
| TiNSG3347BTZZ | 6- 12 | AQ | | D |
| TLABH3281XHZA | 6- 11 | AR | | D |
| [U] | | | | |
| UBATL2029SCZZ | 7- 1 | AG | | B |
| [V] | | | | |
| VCCCTQ1HH180J | 7- 41 | AA | | C |
| VCCCTV1HH121J | 8- 327 | AA | | C |
| VCCCTV1HH180J | 7- 18 | AA | | C |
| VCCCTV1HH300J | 8- 335 | AA | | C |
| // | 8- 336 | AA | | C |
| VCCCTV1HH390J | 7- 17 | AA | | C |
| VCCSTV1HL102J | 7- 10 | AA | | C |
| // | 7- 20 | AA | | C |
| // | 7- 38 | AA | | C |
| VCEAEA1AW107M | 8- 2 | AB | | C |
| VCEAEA1AW226M | 7- 7 | AA | | C |
| VCEAEA1AW227M | 8- 5 | AB | | C |
| // | 8- 304 | AB | | C |
| VCEAEA1AW476M | 8- 3 | AB | | C |
| // | 8- 8 | AB | | C |
| VCEAEA1CW106M | 7- 2 | AC | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| VCEAEA1CW106M | 7- 4 | AC | | C |
| // | 7- 6 | AC | | C |
| VCEAEA1CW336M | 7- 5 | AB | | C |
| VCEAEA1EW226M | 7- 8 | AA | | C |
| // | 7- 9 | AA | | C |
| VCEAEA1EW475M | 7- 3 | AA | | C |
| VCEAEA1EW476M | 8- 314 | AB | | C |
| // | 8- 315 | AB | | C |
| // | 8- 316 | AB | | C |
| VCEAEA1HW106M | 8- 1 | AA | | C |
| // | 8- 320 | AA | | C |
| VCEAEA1HW335M | 8- 309 | AA | | C |
| VCEAEA1HW474M | 8- 6 | AA | | C |
| VCEAEU1CW107M | 8- 305 | AB | | C |
| VCEAEU1EW106M | 8- 310 | AA | | C |
| // | 8- 311 | AA | | C |
| // | 8- 312 | AA | | C |
| VCEAEU1HW105M | 8- 307 | AA | | C |
| VCEAEU1HW475M | 8- 7 | AA | | C |
| // | 8- 320 | AA | | C |
| VCEAJA1EW226M | 10- 1 | AB | | C |
| VCFYJU2EA104K | 8- 318 | AC | | C |
| VCFYJU2EA105K | 8- 319 | AE | | C |
| VCFYJU2EA155K | 8- 321 | AF | | C |
| VCFYJU2EA224K | 8- 319 | AD | | C |
| VCFYJU2EA225K | 8- 321 | AG | | C |
| VCFYJU2EA474K | 8- 318 | AD | | C |
| VCKYTQ1CF105Z | 7- 24 | AE | | C |
| // | 7- 25 | AE | | C |
| VCKYTQ1CF474Z | 8- 18 | AB | | C |
| VCKYTQ1EB104K | 7- 12 | AA | | C |
| VCKYTQ1EB184K | 8- 12 | AC | N | C |
| VCKYTQ1EB224K | 8- 12 | AB | | C |
| VCKYTQ1EF104Z | 10- 2 | AA | | C |
| VCKYTQ1HB104K | 8- 337 | AB | | C |
| VCKYTQ1HB473K | 8- 13 | AA | | C |
| VCKYTV1CF105Z | 7- 11 | AB | | C |
| // | 7- 16 | AB | | C |
| // | 7- 19 | AB | | C |
| // | 7- 35 | AB | | C |
| VCKYTV1EF104Z | 7- 13 | AA | | C |
| // | 7- 14 | AA | | C |
| // | 7- 15 | AA | | C |
| // | 7- 21 | AA | | C |
| // | 7- 22 | AA | | C |
| // | 7- 31 | AA | | C |
| // | 7- 36 | AA | | C |
| // | 7- 37 | AA | | C |
| // | 7- 40 | AA | | C |
| // | 7- 43 | AA | | C |
| // | 7- 44 | AA | | C |
| // | 7- 45 | AA | | C |
| // | 7- 47 | AA | | C |
| // | 7- 49 | AA | | C |
| // | 7- 50 | AA | | C |
| // | 7- 51 | AA | | C |
| // | 7- 52 | AA | | C |
| // | 7- 58 | AA | | C |
| // | 7- 59 | AA | | C |
| // | 7- 61 | AA | | C |
| // | 7- 62 | AA | | C |
| // | 7- 66 | AA | | C |
| VCKYTV1HB101K | 8- 9 | AA | | C |
| VCKYTV1HB102K | 8- 4 | AA | | C |
| // | 8- 17 | AA | | C |
| // | 8- 334 | AA | | C |
| // | 8- 340 | AA | | C |
| // | 8- 342 | AA | | C |
| // | 8- 355 | AA | | C |
| VCKYTV1HB103K | 7- 23 | AB | | C |
| // | 7- 32 | AB | | C |
| // | 8- 14 | AB | | C |
| // | 8- 15 | AB | | C |
| // | 8- 19 | AB | | C |
| // | 8- 20 | AB | | C |
| // | 8- 21 | AB | | C |
| // | 8- 22 | AB | | C |
| VCKYTV1HB122K | 8- 4 | AB | | C |
| VCKYTV1HB123K | 8- 339 | AA | | C |
| VCKYTV1HB153K | 8- 343 | AA | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| VCKYTV1HB153K | 8- 348 | AA | | C |
| VCKYTV1HB182K | 8- 338 | AA | | C |
| VCKYTV1HB183K | 8- 10 | AA | | C |
| VCKYTV1HB222K | 7- 27 | AA | | C |
| // | 7- 28 | AA | | C |
| // | 7- 29 | AA | | C |
| // | 7- 30 | AA | | C |
| // | 7- 34 | AA | | C |
| // | 7- 39 | AA | | C |
| // | 7- 42 | AA | | C |
| // | 7- 46 | AA | | C |
| // | 7- 48 | AA | | C |
| // | 7- 53 | AA | | C |
| // | 7- 54 | AA | | C |
| // | 7- 55 | AA | | C |
| // | 7- 56 | AA | | C |
| // | 7- 57 | AA | | C |
| // | 7- 60 | AA | | C |
| // | 8- 16 | AA | | C |
| VCKYTV1HB272K | 7- 65 | AA | | C |
| // | 8- 23 | AA | | C |
| // | 8- 24 | AA | | C |
| // | 8- 25 | AA | | C |
| VCKYTV1HB331K | 8- 324 | AA | | C |
| // | 8- 325 | AA | | C |
| // | 8- 326 | AA | | C |
| // | 8- 329 | AA | | C |
| // | 8- 330 | AA | | C |
| // | 8- 331 | AA | | C |
| // | 8- 332 | AA | | C |
| // | 8- 333 | AA | | C |
| VCKYTV1HB392K | 8- 323 | AA | | C |
| VCKYTV1HB471K | 8- 9 | AA | | C |
| VCKYTV1HB472K | 7- 26 | AA | | C |
| // | 7- 63 | AA | | C |
| // | 8- 17 | AA | | C |
| // | 8- 344 | AA | | C |
| // | 8- 347 | AA | | C |
| VCKYTV1HB473K | 8- 328 | AA | | C |
| VCKYTV1HB681K | 8- 338 | AA | | C |
| // | 8- 345 | AA | | C |
| // | 8- 349 | AA | | C |
| // | 8- 352 | AA | | C |
| VCKYTV1HB682K | 8- 11 | AA | | C |
| VCKYTV1HB822K | 8- 350 | AA | | C |
| VCKYTV1HB822K | 8- 11 | AA | | C |
| // | 8- 353 | AA | | C |
| VCKYTV1HF223Z | 8- 341 | AA | | C |
| // | 8- 346 | AA | | C |
| // | 8- 351 | AA | | C |
| // | 8- 354 | AA | | C |
| // | 8- 356 | AA | | C |
| // | 8- 357 | AA | | C |
| VCQYNA1HM153K | 8- 313 | AB | | C |
| VCQYNA1HM334K | 8- 317 | AD | | C |
| VCQYNA1HM682K | 8- 313 | AA | | C |
| VCSAPJ1CE475M | 7- 64 | AE | | C |
| VCSAPJ1EE225M | 7- 33 | AD | | C |
| VHDDAN212K/-1 | 8- 27 | AC | | B |
| // | 8- 28 | AC | | B |
| VHDDSS131//-1 | 8- 373 | AA | | B |
| VHDDSS133//-1 | 7- 73 | AA | | B |
| // | 7- 74 | AA | | B |
| // | 7- 75 | AA | | B |
| // | 7- 76 | AA | | B |
| // | 7- 77 | AA | | B |
| // | 8- 367 | AA | | B |
| // | 8- 368 | AA | | B |
| // | 8- 370 | AA | | B |
| // | 8- 371 | AA | | B |
| // | 8- 372 | AA | | B |
| VHDSD103///-1 | 8- 374 | AD | | B |
| VHDS1ZB60//-1 | 8- 500 | AC | | B |
| // | 8- 501 | AC | | B |
| // | 8- 502 | AC | | B |
| VHD1N4148//-1 | 9- 14 | AA | | B |
| VHD1SS82///-1 | 8- 369 | AB | | B |
| VHEHZS3B1//-1 | 8- 521 | AC | | B |
| // | 8- 522 | AC | | B |
| // | 8- 524 | AC | | B |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| VHEHZS3B1//-1 | 8- 525 | AC | | B |
| // | 8- 526 | AC | | B |
| // | 8- 527 | AC | | B |
| // | 8- 530 | AC | | B |
| // | 8- 531 | AC | | B |
| // | 8- 532 | AC | | B |
| // | 8- 533 | AC | | B |
| VHEHZ8.2BP/-1 | 8- 88 | AC | | B |
| VHEMTZ100B/-1 | 8- 89 | AA | | B |
| VHEMTZ3R0A/-1 | 8- 86 | AA | | B |
| VHEMTZ300B/-1 | 8- 528 | AA | | B |
| // | 8- 534 | AA | | B |
| VHEMTZ5R1C/-1 | 8- 523 | AA | | B |
| // | 8- 535 | AA | | B |
| VHEMTZ5R6B/-1 | 8- 87 | AB | | B |
| VHEMTZ5R6C/-1 | 8- 520 | AA | | B |
| VHEMTZ6R8B/-1 | 8- 529 | AB | | B |
| VHERD27FB3/-1 | 7- 258 | AC | | B |
| VHGP1S58V//-1 | 8- 417 | AE | | B |
| // | 8- 418 | AE | | B |
| VHiBA10393//1 | 8- 382 | AD | | B |
| VHiBU4066B/-1 | 8- 376 | AD | | B |
| VHiHD74HC32FM | 7- 92 | AC | | B |
| VHiLB1730//-1 | 7- 87 | AH | | B |
| VHiLH5116NA10 | 7- 86 | AL | | B |
| VHiLH5160N10T | 7- 83 | AP | | B |
| VHiLH5268TH10 | 7- 85 | AR | | B |
| VHiLZ9AH11/-1 | 7- 84 | AZ | | B |
| VHiMC34012-1P | 8- 385 | AF | | B |
| VHiMC34119/-1 | 8- 379 | AF | | B |
| VHiNJM2903M/- | 7- 94 | AD | | C |
| VHiNJM4558D-1 | 8- 380 | AN | | B |
| // | 8- 381 | AN | | B |
| // | 8- 384 | AN | | B |
| // | 8- 388 | AN | | B |
| VHiNJM4558F-1 | 7- 91 | AD | | B |
| VHiNJU4053D-1 | 8- 378 | AF | | B |
| VHiPST591CMT1 | 7- 93 | AE | | B |
| VHiRTC4553F-1 | 7- 90 | AS | | B |
| VHiR96SHF//-1 | 7- 80 | BD | | B |
| VHiS7235A//-1 | 8- 375 | AN | | B |
| VHiTA7291PV-1 | 7- 89 | AM | | B |
| VHiTCD1206D-1 | 10- 4 | AY | | B |
| VHiTEA1064AT1 | 8- 29 | AP | | B |
| VHiTHS56///-1 | 8- 386 | AN | | B |
| // | 8- 387 | AN | | B |
| VHiTLS1019/-1 | 7- 82 | AU | | B |
| VHiULN2003AN/ | 8- 377 | AE | | B |
| // | 8- 383 | AE | | B |
| VHi27010FRK0C | 7- 88 | BL | N | B |
| VHi27010FRL0C | 7- 88 | BL | N | B |
| VHi64180ZRS06 | 7- 81 | AX | | B |
| VHPGP2S13//-1 | 1- 49 | AN | | B |
| VHPLT4657E6-1 | 5- 11 | AW | | B |
| VHPPC817C//-1 | 8- 416 | AE | | B |
| // | 8- 419 | AE | | B |
| // | 8- 420 | AE | | B |
| VHPPC817D//-1 | 8- 422 | AD | | B |
| VHPPC847///-1 | 8- 421 | AM | | B |
| VHPPC852///-1 | 8- 423 | AE | | B |
| VHPSNK05A30-1 | 5- 11 | AV | | B |
| VHVENC101D05A | 8- 516 | AB | | B |
| VHViCPN20//-1 | 7- 78 | AD | | B |
| // | 7- 79 | AD | | B |
| VRD-HT2EY000J | 8- 389 | AA | | C |
| // | 8- 390 | AA | | C |
| // | 8- 391 | AA | | C |
| // | 8- 392 | AA | | C |
| // | 8- 393 | AA | | C |
| // | 8- 394 | AA | | C |
| // | 8- 395 | AA | | C |
| // | 8- 396 | AA | | C |
| // | 8- 397 | AA | | C |
| // | 8- 398 | AA | | C |
| // | 8- 399 | AA | | C |
| // | 8- 400 | AA | | C |
| // | 8- 401 | AA | | C |
| // | 8- 402 | AA | | C |
| // | 8- 403 | AA | | C |
| // | 8- 404 | AA | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| VRD-HT2EY000J | 8- 405 | AA | | C |
| 〃 | 8- 435 | AA | | C |
| 〃 | 8- 507 | AA | | C |
| 〃 | 8- 508 | AA | | C |
| VRD-HT2EY203J | 8- 430 | AA | | C |
| VRD-HT2EY431J | 8- 427 | AA | | C |
| VRD-HT2EY472J | 8- 429 | AA | | C |
| VRD-HT2EY513J | 8- 437 | AA | | C |
| VRD-HT2EY561J | 8- 428 | AA | | C |
| VRD-HT2EY681J | 8- 428 | AA | | C |
| VRD-HT2HY150J | 8- 431 | AA | | C |
| 〃 | 8- 436 | AA | | C |
| VRD-HT2HY200J | 8- 40 | AA | | C |
| VRD-RC2EY000J | 8- 408 | AA | | C |
| 〃 | 8- 409 | AA | | C |
| 〃 | 8- 410 | AA | | C |
| 〃 | 8- 411 | AA | | C |
| 〃 | 8- 413 | AA | | C |
| 〃 | 8- 415 | AA | | C |
| 〃 | 8- 515 | AA | | C |
| 〃 | 8- 518 | AA | | C |
| VRS-HT3AA103J | 8- 438 | AA | | C |
| VRS-HT3AA220J | 8- 41 | AA | | C |
| VRS-HT3AA222J | 8- 433 | AA | | C |
| VRS-HT3AA473J | 8- 438 | AA | | C |
| VRS-HT3AA560J | 8- 41 | AA | | C |
| VRS-HT3DA221J | 8- 432 | AB | | C |
| VRS-HT3DA750J | 8- 434 | AA | | C |
| 〃 | 8- 435 | AA | | C |
| VRS-TP2BD000J | 7- 95 | AA | | C |
| 〃 | 7- 96 | AA | | C |
| 〃 | 7- 133 | AA | | C |
| VRS-TP2BD122J | 7- 98 | AA | | C |
| VRS-TP2BD222J | 10- 6 | AA | | C |
| VRS-TP2BD390J | 10- 7 | AA | | C |
| VRS-TP2BD561J | 7- 171 | AA | | C |
| VRS-TS2AD000J | 7- 126 | AA | | C |
| 〃 | 7- 183 | AA | | C |
| 〃 | 7- 224 | AA | | C |
| 〃 | 7- 230 | AA | | C |
| 〃 | 7- 234 | AA | | C |
| 〃 | 7- 235 | AA | | C |
| 〃 | 7- 236 | AA | | C |
| 〃 | 7- 248 | AA | | C |
| 〃 | 8- 85 | AA | | C |
| 〃 | 8- 451 | AA | | C |
| 〃 | 8- 489 | AA | | C |
| VRS-TS2AD100J | 7- 115 | AA | | C |
| 〃 | 7- 116 | AA | | C |
| 〃 | 7- 118 | AA | | C |
| 〃 | 7- 119 | AA | | C |
| 〃 | 7- 121 | AA | | C |
| 〃 | 7- 125 | AA | | C |
| 〃 | 7- 128 | AA | | C |
| 〃 | 7- 130 | AA | | C |
| 〃 | 7- 131 | AA | | C |
| 〃 | 7- 142 | AA | | C |
| 〃 | 7- 143 | AA | | C |
| 〃 | 7- 144 | AA | | C |
| 〃 | 7- 145 | AA | | C |
| 〃 | 7- 153 | AA | | C |
| 〃 | 7- 154 | AA | | C |
| 〃 | 7- 155 | AA | | C |
| 〃 | 7- 159 | AA | | C |
| 〃 | 7- 160 | AA | | C |
| 〃 | 7- 161 | AA | | C |
| 〃 | 7- 162 | AA | | C |
| 〃 | 7- 163 | AA | | C |
| 〃 | 7- 164 | AA | | C |
| 〃 | 7- 165 | AA | | C |
| 〃 | 7- 166 | AA | | C |
| 〃 | 7- 237 | AA | | C |
| 〃 | 7- 249 | AA | | C |
| 〃 | 7- 253 | AA | | C |
| 〃 | 7- 254 | AA | | C |
| 〃 | 7- 255 | AA | | C |
| VRS-TS2AD101J | 8- 69 | AA | | C |
| 〃 | 8- 495 | AA | | C |
| VRS-TS2AD102J | 7- 129 | AA | | C |
| 〃 | 7- 182 | AA | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| VRS-TS2AD102J | 7- 202 | AA | | C |
| 〃 | 8- 77 | AA | | C |
| 〃 | 8- 80 | AA | | C |
| 〃 | 8- 454 | AA | | C |
| VRS-TS2AD103J | 7- 120 | AA | | C |
| 〃 | 7- 135 | AA | | C |
| 〃 | 7- 136 | AA | | C |
| 〃 | 7- 137 | AA | | C |
| 〃 | 7- 138 | AA | | C |
| 〃 | 7- 146 | AA | | C |
| 〃 | 7- 147 | AA | | C |
| 〃 | 7- 158 | AA | | C |
| 〃 | 7- 167 | AA | | C |
| 〃 | 7- 168 | AA | | C |
| 〃 | 7- 169 | AA | | C |
| 〃 | 7- 170 | AA | | C |
| 〃 | 7- 172 | AA | | C |
| 〃 | 7- 173 | AA | | C |
| 〃 | 7- 174 | AA | | C |
| 〃 | 7- 175 | AA | | C |
| 〃 | 7- 176 | AA | | C |
| 〃 | 7- 177 | AA | | C |
| 〃 | 7- 179 | AA | | C |
| 〃 | 7- 184 | AA | | C |
| 〃 | 7- 185 | AA | | C |
| 〃 | 7- 187 | AA | | C |
| 〃 | 7- 193 | AA | | C |
| 〃 | 7- 194 | AA | | C |
| 〃 | 7- 195 | AA | | C |
| 〃 | 7- 201 | AA | | C |
| 〃 | 7- 203 | AA | | C |
| 〃 | 7- 204 | AA | | C |
| 〃 | 7- 206 | AA | | C |
| 〃 | 7- 211 | AA | | C |
| 〃 | 7- 212 | AA | | C |
| 〃 | 7- 229 | AA | | C |
| 〃 | 7- 231 | AA | | C |
| 〃 | 7- 232 | AA | | C |
| 〃 | 7- 233 | AA | | C |
| 〃 | 7- 238 | AA | | C |
| 〃 | 7- 240 | AA | | C |
| 〃 | 7- 242 | AA | | C |
| 〃 | 7- 244 | AA | | C |
| 〃 | 7- 246 | AA | | C |
| 〃 | 7- 250 | AA | | C |
| 〃 | 7- 251 | AA | | C |
| 〃 | 8- 450 | AA | | C |
| 〃 | 8- 458 | AA | | C |
| 〃 | 8- 474 | AA | | C |
| 〃 | 8- 475 | AA | | C |
| 〃 | 8- 476 | AA | | C |
| 〃 | 8- 478 | AA | | C |
| 〃 | 8- 479 | AA | | C |
| 〃 | 8- 480 | AA | | C |
| 〃 | 8- 481 | AA | | C |
| 〃 | 8- 482 | AA | | C |
| 〃 | 8- 483 | AA | | C |
| 〃 | 8- 496 | AA | | C |
| 〃 | 8- 498 | AA | | C |
| VRS-TS2AD104J | 8- 44 | AA | | C |
| 〃 | 8- 46 | AA | | C |
| 〃 | 8- 61 | AA | | C |
| 〃 | 8- 62 | AA | | C |
| 〃 | 8- 440 | AA | | C |
| VRS-TS2AD105J | 8- 52 | AA | | C |
| 〃 | 8- 57 | AA | | C |
| 〃 | 8- 58 | AA | | C |
| 〃 | 8- 63 | AA | | C |
| 〃 | 8- 71 | AA | | C |
| 〃 | 8- 471 | AA | | C |
| 〃 | 8- 472 | AA | | C |
| VRS-TS2AD121J | 8- 55 | AA | | C |
| VRS-TS2AD122J | 8- 78 | AA | | C |
| VRS-TS2AD124J | 8- 65 | AA | | C |
| VRS-TS2AD133J | 8- 72 | AA | | C |
| 〃 | 8- 74 | AA | | C |
| 〃 | 8- 79 | AA | | C |
| 〃 | 8- 465 | AA | | C |
| 〃 | 8- 499 | AA | | C |
| VRS-TS2AD134J | 8- 83 | AA | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| VRS-TS2AD151J | 7- 156 | AA | | C |
| VRS-TS2AD152J | 7- 157 | AA | | C |
| 〃 | 8- 462 | AA | | C |
| VRS-TS2AD153J | 7- 192 | AA | | C |
| 〃 | 8- 79 | AA | | C |
| 〃 | 8- 468 | AA | | C |
| VRS-TS2AD154J | 8- 463 | AA | | C |
| VRS-TS2AD163J | 8- 452 | AA | | C |
| 〃 | 8- 464 | AA | | C |
| VRS-TS2AD164J | 8- 486 | AA | | C |
| VRS-TS2AD183J | 8- 84 | AA | | C |
| 〃 | 8- 453 | AA | | C |
| VRS-TS2AD2R2J | 8- 51 | AA | | C |
| VRS-TS2AD201J | 8- 55 | AG | | C |
| VRS-TS2AD203J | 8- 452 | AA | | C |
| 〃 | 8- 455 | AA | | C |
| 〃 | 8- 470 | AA | | C |
| 〃 | 8- 490 | AA | | C |
| 〃 | 8- 491 | AA | | C |
| 〃 | 8- 492 | AA | | C |
| 〃 | 8- 496 | AA | | C |
| 〃 | 8- 497 | AA | | C |
| VRS-TS2AD204J | 8- 49 | AA | | C |
| VRS-TS2AD221J | 7- 190 | AA | | C |
| 〃 | 7- 223 | AA | | C |
| 〃 | 8- 448 | AA | | C |
| 〃 | 8- 449 | AA | | C |
| VRS-TS2AD222J | 8- 60 | AA | | C |
| VRS-TS2AD223J | 7- 139 | AA | | C |
| 〃 | 8- 453 | AA | | C |
| 〃 | 8- 473 | AA | | C |
| VRS-TS2AD224J | 8- 49 | AA | | C |
| VRS-TS2AD225J | 8- 460 | AA | | C |
| 〃 | 8- 461 | AA | | C |
| VRS-TS2AD243J | 8- 45 | AA | | C |
| VRS-TS2AD271J | 7- 140 | AA | | C |
| 〃 | 7- 141 | AA | | C |
| 〃 | 7- 149 | AA | | C |
| 〃 | 7- 150 | AA | | C |
| 〃 | 7- 151 | AA | | C |
| 〃 | 7- 152 | AA | | C |
| 〃 | 7- 180 | AA | | C |
| 〃 | 7- 186 | AA | | C |
| 〃 | 7- 197 | AA | | C |
| 〃 | 7- 198 | AA | | C |
| 〃 | 7- 199 | AA | | C |
| 〃 | 7- 200 | AA | | C |
| 〃 | 7- 205 | AA | | C |
| 〃 | 7- 207 | AA | | C |
| 〃 | 7- 210 | AA | | C |
| 〃 | 7- 213 | AA | | C |
| 〃 | 7- 214 | AA | | C |
| 〃 | 7- 215 | AA | | C |
| 〃 | 7- 216 | AA | | C |
| 〃 | 7- 217 | AA | | C |
| 〃 | 7- 218 | AA | | C |
| 〃 | 7- 219 | AA | | C |
| 〃 | 7- 225 | AA | | C |
| 〃 | 7- 226 | AA | | C |
| 〃 | 7- 227 | AA | | C |
| 〃 | 7- 228 | AA | | C |
| 〃 | 7- 252 | AA | | C |
| VRS-TS2AD273J | 8- 70 | AA | | C |
| VRS-TS2AD3R0J | 7- 134 | AA | | C |
| 〃 | 7- 188 | AA | | C |
| VRS-TS2AD301J | 8- 67 | AA | | C |
| VRS-TS2AD302J | 7- 123 | AA | | C |
| 〃 | 8- 446 | AA | | C |
| VRS-TS2AD303J | 8- 45 | AA | | C |
| VRS-TS2AD332J | 7- 209 | AA | | C |
| 〃 | 8- 42 | AA | | C |
| VRS-TS2AD333J | 8- 484 | AA | | C |
| 〃 | 8- 494 | AA | | C |
| VRS-TS2AD362J | 8- 456 | AA | | C |
| VRS-TS2AD391J | 8- 48 | AA | | C |
| 〃 | 8- 82 | AA | | C |
| VRS-TS2AD392J | 8- 56 | AA | | C |
| 〃 | 8- 485 | AA | | C |
| 〃 | 8- 487 | AA | | C |
| VRS-TS2AD394J | 8- 469 | AA | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| VRS-TS2AD471J | 7- 239 | AA | | C |
| 〃 | 7- 241 | AA | | C |
| 〃 | 7- 243 | AA | | C |
| 〃 | 7- 245 | AA | | C |
| 〃 | 7- 247 | AA | | C |
| 〃 | 8- 75 | AA | | C |
| 〃 | 8- 439 | AA | | C |
| 〃 | 8- 441 | AA | | C |
| 〃 | 8- 442 | AA | | C |
| 〃 | 8- 443 | AA | | C |
| 〃 | 8- 444 | AA | | C |
| 〃 | 8- 445 | AA | | C |
| 〃 | 8- 477 | AA | | C |
| VRS-TS2AD472J | 7- 181 | AA | | C |
| 〃 | 8- 457 | AA | | C |
| 〃 | 8- 459 | AA | | C |
| 〃 | 8- 487 | AA | | C |
| VRS-TS2AD474J | 7- 196 | AA | | C |
| 〃 | 8- 53 | AA | | C |
| 〃 | 8- 54 | AA | | C |
| 〃 | 8- 64 | AA | | C |
| 〃 | 8- 66 | AA | | C |
| 〃 | 8- 68 | AA | | C |
| VRS-TS2AD511J | 7- 117 | AA | | C |
| 〃 | 7- 222 | AA | | C |
| 〃 | 8- 77 | AA | | C |
| 〃 | 8- 80 | AA | | C |
| VRS-TS2AD512J | 7- 191 | AA | | C |
| VRS-TS2AD513J | 8- 81 | AA | | C |
| 〃 | 8- 455 | AA | | C |
| VRS-TS2AD562J | 7- 148 | AA | | C |
| 〃 | 7- 208 | AA | | C |
| VRS-TS2AD621J | 8- 47 | AA | | C |
| VRS-TS2AD622J | 7- 178 | AA | | C |
| 〃 | 8- 493 | AA | | C |
| VRS-TS2AD623J | 7- 189 | AA | | C |
| VRS-TS2AD683J | 8- 43 | AA | | C |
| 〃 | 8- 50 | AA | | C |
| 〃 | 8- 59 | AA | | C |
| 〃 | 8- 73 | AA | | C |
| 〃 | 8- 467 | AA | | C |
| VRS-TS2AD685J | 8- 488 | AA | | C |
| VRS-TS2AD753J | 8- 447 | AA | | C |
| 〃 | 8- 463 | AA | | C |
| VRS-TS2AD820J | 7- 220 | AA | | C |
| 〃 | 7- 221 | AA | | C |
| VRS-TS2AD821J | 8- 75 | AA | | C |
| 〃 | 8- 462 | AA | | C |
| VRS-TS2AD822J | 8- 484 | AA | | C |
| 〃 | 8- 485 | AA | | C |
| VRS-TS2AD823J | 8- 466 | AA | | C |
| VRSTS2AD1183F | 7- 122 | AA | | C |
| VRSTS2AD1742F | 7- 113 | AA | | C |
| VRSTS2AD3651F | 8- 76 | AA | | C |
| VRSTS2AD4752F | 7- 124 | AA | | C |
| VRSTS2AD8662F | 7- 114 | AA | | C |
| 〃 | 7- 127 | AA | | C |
| VSBS108////-1 | 8- 31 | AE | | B |
| 〃 | 8- 424 | AE | | B |
| VSDTC114EK//-1 | 7- 110 | AB | | B |
| 〃 | 7- 111 | AB | | B |
| VS2SA1037KR-1 | 8- 35 | AB | | B |
| 〃 | 8- 36 | AB | | B |
| VS2SA1037KS-1 | 8- 426 | AB | | B |
| VS2SA1727//-1 | 8- 34 | AE | | B |
| VS2SC1214-CDC | 7- 108 | AD | | B |
| VS2SC2412KR-1 | 8- 30 | AD | | B |
| 〃 | 8- 32 | AD | | B |
| 〃 | 8- 33 | AD | | B |
| 〃 | 8- 37 | AD | | B |
| 〃 | 8- 38 | AD | | B |
| 〃 | 8- 39 | AD | | B |
| 〃 | 8- 425 | AD | | B |
| VS2SC2412KS-1 | 7- 109 | AB | | B |
| 〃 | 10- 5 | AB | | B |
| [X] | | | | |
| XBPSD30P06K00 | 50-B3 | AA | | C |
| XBPSE30P08K00 | 50-B4 | AA | | C |
| XBPSN40P06K00 | 50-B5 | AA | | C |
| XEBSD30P06000 | 50-B6 | AA | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| XEBSD30P08000 | 50-B7 | AA | | C |
| XEBSD30P10000 | 50-B16 | AA | | C |
| XEBSE30P10000 | 50-B9 | AA | | C |
| XEBSF30P08000 | 50-B8 | AA | | C |
| XEBSF30P10000 | 50-B12 | AA | | C |
| XEPSD26P06000 | 50-B10 | AA | | C |
| XHBSD30P05000 | 50-B11 | AA | | C |
| XHBSD30P10000 | 50-B19 | AA | | C |
| XJBSD20P04000 | 50-B13 | AA | | C |
| XJPSD30P04000 | 50-B17 | AA | | C |
| XUBSD20P06000 | 50-B14 | AA | | C |
| [0] | | | | |
| 0CBBFZ89154Z/ | 9- 4 | AC | | C |
| 0CBFBZ009BZZ/ | 9- 72 | AC | | C |
| 0CBLRH0308ZQ/ | 9- 67 | AM | | C |
| 0CBLRS0101ZZ/ | 9- 69 | AC | | C |
| 0CBLRS0103ZZ/ | 9- 68 | AC | | C |
| 0CBMRS0029ZZ/ | 9- 71 | AG | | C |
| 0CBMRZ5068ZZ/ | 9- 70 | AC | | C |
| 0CBPCZ0160ZZ/ | 9- 64 | AE | | C |
| 0CBPCZ0161ZZ/ | 9- 63 | AF | | C |
| 0CBPFZ0242ZZ/ | 9- 66 | AL | | B |
| 0CBPJCZZ0037/ | 9- 59 | AG | | A |
| 0CBPJT0115ZZ/ | 9- 60 | AF | | A |
| 0CBPKZ0194ZZ/ | 9- 62 | AC | | C |
| 0CBPZZ0604ZZ/ | 9- 3 | AC | | C |
| 0CBPZZ0739ZZ/ | 9- 65 | AE | | C |
| 0CBUAC0004DZ/ | 9- 11 | AC | | B |
| 0CBUAC0027CZ/ | 9- 10 | AG | | B |
| 0CBUAC0056BZ/ | 9- 9 | AD | | B |
| 0CBUAG0091AZ/ | 9- 8 | AQ | | B |
| 0CBUBB0178DZ/ | 9- 12 | AG | | B |
| 0CBUBB0187AZ/ | 9- 17 | AG | | B |
| 0CBUBC0220BZ/ | 9- 13 | AD | | B |
| 0CBUBC0221AZ/ | 9- 15 | AC | | B |
| 0CBUBC0280BZ/ | 9- 16 | AC | | B |
| 0CBUBDAA3R0C/ | 9- 19 | AC | | C |
| 0CBUBDAA6R2C/ | 9- 21 | AC | | B |
| 0CBUBDAC270D/ | 9- 18 | AC | | B |
| 0CBUBDAE150B/ | 9- 20 | AD | | B |
| 0CBUBDAE300D/ | 9- 22 | AD | | B |
| 0CBUCB0112AZ/ | 9- 7 | AK | | B |
| 0CBUCC0010FZ/ | 9- 6 | AC | | B |
| 0CBUCC0013DZ/ | 9- 5 | AM | | B |
| 0CBUDC0139AZ/ | 9- 29 | AN | | B |
| 0CBUDZ0052ZZ/ | 9- 61 | AG | | B |
| 0CBUEEB222BA/ | 9- 34 | AC | | C |
| 0CBUEEB223BA/ | 9- 27 | AC | | C |
| 0CBUEEB271BA/ | 9- 35 | AA | | C |
| 0CBUEEB272BA/ | 9- 37 | AA | | C |
| 0CBUEEB330BM/ | 9- 32 | AA | | C |
| 0CBUEEB471BA/ | 9- 31 | AC | | C |
| 0CBUEEB564BA/ | 9- 28 | AA | | C |
| 0CBUEEB822BA/ | 9- 36 | AA | | C |
| 0CBUEEC474BG/ | 9- 25 | AB | | C |
| 0CBUEFC564BA/ | 9- 24 | AC | | C |
| 0CBUEFD561AU/ | 9- 33 | AC | | C |
| 0CBUEFER33CH/ | 9- 26 | AC | | C |
| 0CBUEFE391CL/ | 9- 30 | AC | | C |
| 0CBUEFE823CG/ | 9- 29 | AC | | C |
| 0CBUEFF821BK/ | 9- 38 | AC | | C |
| 0CBUERALE471/ | 9- 57 | AF | | B |
| 0CBUFBA102DC/ | 9- 39 | AD | | B |
| 0CBUGAC122GK/ | 9- 51 | AG | | C |
| 0CBUGAC221HD/ | 9- 52 | AC | | C |
| 0CBUGAD100HD/ | 9- 50 | AC | | C |
| 0CBUGAD390PR/ | 9- 49 | AE | | C |
| 0CBUGAE122NS/ | 9- 54 | AH | | C |
| 0CBUGAE221HD/ | 9- 55 | AD | | C |
| 0CBUGBQ820BR/ | 9- 42 | AP | | C |
| 0CBUGCF104DS/ | 9- 56 | AC | | C |
| 0CBUGCQ222AQ/ | 9- 48 | AE | | C |
| 0CBUGCS222AP/ | 9- 53 | AC | | C |
| 0CBUGCU103BC/ | 9- 43 | AD | | C |
| 0CBUGCU471BQ/ | 9- 44 | AE | | C |
| 0CBUGCZ222CK/ | 9- 41 | AF | | C |
| 0CBUGFF102ER/ | 9- 47 | AC | | C |
| 0CBUGFF103ER/ | 9- 45 | AC | | C |
| 0CBUGFF683ER/ | 9- 46 | AD | | C |
| 0CBUGFZ224FY/ | 9- 40 | AG | | C |

| PARTS CODE | NO. | PRICE RANK | NEW MARK | PART RANK |
|---|---|---|---|---|
| 0CBUKZ0582ZZ/ | 9- 2 | AH | | C |
| 0CBUZZ0100ZZ/ | 9- 58 | AH | | B |
| 0CB829820363/ | 9- 1 | BC | | B |

## CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

(Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type recommandé par le constructeur.
Mettre au rébut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING
Explosionsfare vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

SHARP

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